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ABSTRACT

This digest for national and international officials, educational administrators, teacher trainers, and teachers addresses the purposes and goals of school feeding projects. Projects that both do and do not receive donated food from abroad are considered. The digest is introduced with a discussion of background information. This discussion raises basic questions about school feeding programs and offers tentative replies. The articles that follow concern: (1) educational experiences and learning activities that could be linked to school feeding programs; (2) suggestions for ways to link cognitive interventions to school feeding programs; (3) a proposal for research on the impact of school feeding programs; (4) the development of a relatively simple method to monitor and evaluate school feeding programs; and (5) a school feeding program in Madagascar that was linked to a teacher training program. A statement on the World Food Programme's goals that was made by the program's director in 1986 is appended. (RH)

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Digest 21

Some Recent Ideas on School Feeding

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Unesco-UNICEF-WFP
Co-operative Programme
Paris 1986

Child, Family, Community

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* *Exists in French*

** *Exists in French and Spanish*

Continued on inside back cover

Digest 21

Some recent ideas on school feeding

with contributions by

Claude Chicot - Beryl Levinger - Richard Loewald
Richard Sack - Sheila Turner and Jenny Frost

Unesco-UNICEF-WFP
Co-operative Programme
Paris 1986

PREFACE

This document has been prepared as part of a series issued by Unesco's Unit for Co-operation with UNICEF (the United Nations Children's Fund) and WFP (the World Food Programme). It is hoped that this Digest will provide officials of Member States and of UNICEF and WFP as well as of other UN bodies with relatively up-to-date information to enable them to improve food-aid projects which benefit children and women particularly in the developing countries.

The document is not, however, a "how to" guide on school feeding projects. Rather, the articles in this Digest may perhaps serve to encourage busy national and international officials, educational administrators, teacher-trainers and teachers to "step back" for a moment from their day-to-day concerns and ask themselves basic questions on the purpose and goals of school feeding projects - whether these receive donated food from abroad or not. Nevertheless, an attempt is made to remain practical and not too theoretical.

It goes without saying that the views expressed in this document are those of the authors and do not necessarily reflect those of Unesco.

This document is also available in French. The title of the French version is 'Alimentation scolaire' (recueil d'articles).

Paris
December 1986

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INTRODUCTION

by Richard Loewald

Unesco's Long-Standing Involvement in Programmes to Promote the Welfare of Children

Unesco has been concerned with the welfare of children since its inception in the mid-1940s. At that time the consequences of the Second World War were still very much in the minds of officials of Member States and of the UN system. Six years after the war ended, at the XIVth International Conference on Public Education convened by Unesco and the International Bureau of Education (IBE) in Geneva in 1951, the question of school meals and clothing was broached. In the foreword of the IBE Conference Report, the following sentence appeared, 'It is essential to ensure that no child / emphasis added / is impeded in his school work due to being insufficiently nourished or inadequately clothed.' A section of this IBE report deals with the educational aims of school meals; for example, it is stated 'that in many countries the school meal is no longer simply a means of social aid, but has grown into a 'lesson' on food hygiene and balance, and an occasion for ... educational social contacts'.

About the Articles in this Digest

One of the articles in this Digest, 'The Contribution of School Feeding Programmes to Science Teaching' by Turner and Frost, outlines possible educational experiences and learning activities which could be linked to school feeding programmes. Another article, Levinger's 'School Feeding Programmes : Myth and Potential' makes specific suggestions on how cognitive interventions may be directly linked to school feeding programmes per se and makes some proposals for research.

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In still another article in this document, Richard Sack attempts to develop a relatively simple method to monitor/evaluate school feeding programmes, based on a school feeding scheme in Niger. His article and that of Levinger are attempts to apply 'scientific' techniques to discover whether school feeding programmes are justifiable. Chicot's study of a school feeding programme (SFP) in Madagascar, also included in this Digest, tells how the SFP there was linked to a teacher-training programme. Chicot's article is essentially descriptive, and its value for teacher-trainers and curriculum developers in other countries will be to allow for reflection on what adaptation would need to be made in light of a given national situation.

A Few Reflections on School Feeding Programmes

This short introduction raises some basic questions about school feeding programmes and offers tentative replies.

'Justifying' School Feeding Programmes

In my own view, the underlying justification for school feeding programmes is that when groups of human beings come together to work - e.g. what children do in schools - provision needs to be made for a meal. School feeding programmes have the advantage that the persons for whom the food is intended actually receive it. Although it is true that frequently the 'poorest of the poor' do not benefit from school feeding programmes, nor do they benefit usually from other food-aid projects*, in fact in most countries ('developed' or 'developing') assistance for those at the bottom of the socio-economic ladder is extremely difficult to provide and in some cases virtually impossible. This issue will be discussed in more detail below.

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* See 'Food for Thought - The Use and Abuse of Food Aid in the Fight Against World Hunger' by Jonathan Fryer (Geneva), World Council of Churches, 1981, p. 14.

Most of the many attempts to 'justify' or denigrate school feeding programmes stem from a carefully maintained fiction that development projects, whether they involve food aid or not, are developed on the basis of 'neutral scientific' techniques. Often - especially in the U.N. system - such a 'scientific' attitude reflects what Fuglesang calls a 'conventional economistic approach to development'*.

In fact the decision on what kind of project should receive food aid or any other assistance for that matter is usually a complex one based often on the policies of or the prejudices prevalent in donor countries and aid-giving agencies. Currently, donor agencies are emphasizing 'agriculture and rural development' often without realizing that unless inter alia health and educational services are provided, such rural development will be difficult, if not impossible, to promote.

For example, in one country I visited, a secondary school feeding programme which was operating very smoothly was being phased out over the strong objection of the Government. The ending of the project had been decided upon mainly because the food-aid-giving body had decided that 'rural development' (rather narrowly defined at that) was clearly more important. The secondary school feeding project was a modest one costing about one million dollars. The 'multi-purpose rural development' project which was to replace the secondary school feeding project was over 10 times more expensive and would have required complex administrative co-ordination on the part of several ministries - an exercise which would have severely taxed the bureaucracies of 'developed' countries, not to speak of the ministries of the recipient country which had a desperate shortage of trained man-power at all levels of government. In this case the choice to replace the smooth-running project, which benefited secondary schools, by a multi-purpose project was made in the name of rather ill-defined principles of development.

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* 'The Myth of People's Ignorance' by Andreas Fuglesang in *Development Dialogue*, 1984, p. 42.

However, making a choice between projects is inevitable since the amount of food available is not infinite. The act of making such a choice often involves conflicting views and, therefore, an attempt is usually made to disguise the political or 'value-loaded' criteria often used in making such a choice. But as Schulthes has written recently,* 'all bureaucracies have a deeply-rooted aversion to conflict and a keenly developed sense for eliminating it as soon as it occurs'. He goes on to say that bureaucracies attempt to neutralize conflict:

> 'The enormous investment by the aid community in conferences, committees, ad-hoc consultations, symposia, workshops, task-forces, further studies; the never-ending attempts at greater integration and co-ordination, the frequent resorting to consultancies, to say nothing of the endless procession of missions to developing countries is, much of it, the bureaucratic response to conflict. Organizational distinction between planning and implementation, or reference of problems to further study or other fora, to new procedures and systems, and, generally, to a higher level of abstraction, is the typical way of avoiding decision'.**

Or, as I have suggested above, it is disguising the value judgement aspects of such a choice.

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* 'The Effectiveness of Aid as a Problem of Bureaucratic Management' by Jens H. Schulthes, Rome, July 1985, p.9.

** Ibid, p.10.

Scientific Method, Value Judgements, and Decisions on Policy (i.e. Choice)

I think it is worthwhile here to make a digression and review some ideas on value judgements, scientific method, and policy decisions. The great Swedish scholar, Gunnar Myrdal, has stressed that 'in our rationalist [which is quite different from "rational" - RL] civilization, people want to appear consistent in their opinions and want to present reasons for them...'* He also says** that one problem for the social scientist, (and I would add also for the officials of multi- or bilateral aid-giving bodies) is how to be '...objective, and at the same time [be] practical'. By 'practical', Myrdal states, he means matters related to means and ends. But what is meant by being objective? In order to obtain answers regarding policies, questions must be posed, and how these questions are formulated involves value judgements. This matter of 'value-loaded questions' is frequently ignored by officials when they begin their work. Or, to put it somewhat differently, Myrdal points out that 'valuations are thus necessarily involved when we observe facts... and not only at the stage when we draw political inferences from facts and valuations.'*** Kutsch has underscored the fact that scientific method, or more precisely 'theory construction', (and it is the former which 'neutral' officials wish to believe they are using) requires 'uninvolved observation of the changing world. It is thus an unlikely mode of thought to serve as a guide to man once he himself engages in bringing about changes in the world.'**** 'In the study of under-developed [sic] countries', Myrdal points out, 'the drive to "objectify"... is apparent, for instance,

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* Gunnar Myrdal *Objectivity in Social Research*, London, Gerald Duckworth & Co. Ltd., 1970, p.32.

** Ibid. p.4.

*** Ibid., p.9

**** Gerhard Kutsch, *Scientific Rationality and the Search for Certainty: a Perspective on the Modern Project*, un-published doctoral thesis, Syracuse, New York, 1976, Preface, p. XIV.

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in the common attempts to give a definition of development - and underdevelopment - without relying on value premises. This is, of course, not possible.'*

The following quotations from a recent work on *Evaluating Health Impact - Water Supply, Sanitation, and Hygiene Education* are an example of aid workers trying to ignore the question of value judgements when making choices.**

> 'Some scientists (Walsh and Warren, 1979) and agencies (USAID, 1982) have argued that the record is in, that the health impact of water supply and sanitation projects is small, and that this sector is not competitive with other investments simply as a health intervention. Others have argued that, even when the direct health impact of such an intervention is small, a program based on that intervention may constitute a rational health investment.'

It would seem to me that what is missing in this statement is the recognition that water supply and sanitation projects are normally conceived of as being 'good' because they help preserve life. The article goes on to try to prove that it is faulty scientific techniques which prevent the true value of water and sanitation projects from becoming evident, and concludes that: 'It takes generations for the full effects of.../health and environmental/ improvements to be felt and, presumably because of indirect effects operating through nutritional status, such improvements lead to reductions in diseases that are not directly related to water supply and sanitation conditions.'

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* Myrdal op cit., page 61.

** *Evaluating Health Impact - Water Supply, Sanitation, and Hygiene Education* by John Briscoe, Richard G. Feachem, and M. Mujibur Rahaman, co-published by the United Nations Children's Fund (UNICEF), the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), and the /Canadian/International Development Research Centre (IDRC), p.56.

These brief remarks may lead the reader of this Digest to be appropriately sceptical about ends and means and intellectual formulations in the various articles which follow this Introduction.

Some Questions and Proposed Replies on the Value of School Feeding Programmes

In addition to the questions on 'scientific neutrality' raised above, it is useful, I believe, to pose a number of quite basic questions on school feeding programmes (SFPs), the relative merits of SFPs as opposed to other uses for food aid, and whether for elaborate and quite statistically-oriented methods for monitoring and/or evaluating SFPs are necessary.

These questions with my replies are given below. The questions, of course, imply value judgements. The replies are based not on elaborate research but rather on many years of experience in dealing with school feeding programmes.

1. *Is there any reason to believe that a school feeding programme whether it uses local or externally-donated food would harm the essential objective of a school, namely to facilitate effective learning?*

   Reply: No. However, a chaotically organized school feeding programme, and particularly one for which hygienic standards are very low, not only causes health problems, and prevents the provision of the food on a regular basis which is supposed to help children to be more alert in class, but equally as bad. Such a chaotic SFP gives precisely the wrong example for students and teaching staff alike. If there is one thing that differentiates a poor school from a good one, it is whether the school, including its teaching/learning programme and such auxiliary services as school feeding, is carefully organized. For, children learn much by simply seeing what goes on around them. If, for example, in the school feeding programme, hygienic standards are bad, children will learn to tolerate such a condition and this is not conducive to improvement/change.

2. *Is there any reason to believe that decisions on whether to opt for school feeding rather than for, say, food-for-work projects, are in fact made on a 'scientifically-neutral' basis?*

Reply: I believe the answer is no. Despite many years of efforts on the part of economists, many of whom work for international organizations, to convince developing countries that decisions on the 'rational' use of scarce resources for one project as opposed to another should be made on the basis of supposedly scientific calculations, if not on cost-benefit studies, decisions on what projects to undertake are in practice rarely made on the basis of supposedly 'neutral' methods. This should hardly be surprising; in the so-called 'developed countries' such decisions about how to allocate resources are rarely made primarily on the basis of economic/statistical data. (And even if they -- the decisions -- were made only on the basis of economic data, as mentioned above, such decisions would not be 'value-free'.) Rather, developed and developing countries alike normally make such decisions on the basis of numerous factors which include: ideology, preferences or prejudices of the national and international officials involved, political and economic pressures from various social groups within the society, pressures from commercial interests which may benefit or be harmed from one project or another, and the relative strength of a given ministry in the government structure. Thus, for international aid-giving bodies to pretend that most decisions about which project to undertake will be made on the basis of 'neutral' data is usually self-defeating. That is not to say that in certain situations, a particularly sensitive and skilled technician with good knowledge of a specific country's potentialities, problems, resources and its (the country's) cultural and historical background, cannot make the task of the decision-makers somewhat less difficult by using or preparing economic or statistical data. The weighing of the various factors mentioned above is in fact what decision-makers (i.e. high level national officials - Ministers or their immediate collaborators - and top-level international officials) do in practice.

3. *Should the food supplied for feeding projects be channelled to very young children, if food is in short supply (and this 'if' is of crucial importance), rather than to school-age children?*

Reply: Both common sense and a considerable body of research suggest that very young children are seriously affected physically and mentally by a lack of sufficient and/or nutritionally adequate food. So if a choice must be made, few would hesitate to opt for a feeding programme for pre-school children and their mothers. The problem, however, is that it is often extremely difficult to reach these malnourished children: if, for example, their nutritional status is due to chaotic social conditions caused by catastrophes, whether man-made or natural (in far too many cases the former are the cause), then it is very difficult to 'deliver' the food to the neediest children. Also the maternal and child health care (MCH) infrastructure and networks are fragile and have difficulty in providing basic preventive and curative health services even without having to deal with the additional task of distributing food.

One of the reasons for the relative success of many school feeding programmes is that the infrastructure for schools is usually better financed and often better organized than is the public health infrastructure. Also the teaching and administrative staff in schools are usually capable - if properly motivated (another important 'if') - to deal with the administrative and hygienic problems involved in running a school feeding programme.

Hence, the fact that malnourished or under-nourished very young children, for physiological and physical reasons, need additional nutritious food and basic health care, should not cause food-aid-giving agencies to assume automatically that it will in practice be possible for MCH-related feeding programmes to be favoured on most occasions over school feeding projects. In many countries, the MCH system is simply too fragile to accommodate a food distribution system. There is evidence that, in any case, the food given (often dried skimmed milk) is not necessarily used by the

mother for the youngest and most-at-risk children but rather is used as a supplement for the whole family. Food which has a relatively high commercial value may even be sold by the beneficiary family. While this is against the rules of the food-aid-giving bodies and usually contravenes the intentions of the donor countries, this may help the nutritional status of the whole family, if, as some economists and nutritionists maintain, the propensity is high for poor families to use any additional income on the purchase of food.

4. *Should school feeding projects receive low priority from food-aid-giving bodies because they often do not reach the 'poorest of the poor'?*

Reply: It is probably quite true that in many situations the 'poorest of the poor' -- who are the favourite target of national or international organizations concerned with the welfare of populations in both developing and developed countries -- are not reached effectively through school feeding programmes. It should be noted that concentration on the most deprived clearly involves a 'value judgement.' But many years of experience in relatively wealthy countries, which has not to my knowledge been contradicted in disadvantaged (developing) countries, indicates that providing the poorest segments of a society with social benefits (e.g. education and health services, food through subsidies or food stamps) is particularly difficult because those at the bottom of the socio-economic ladder usually have so few organizational skills or time to take advantage of what meagre social services may exist. This is particularly true for women who must take care of children, undertake subsistence farming or in urban areas provide food for the family by other means, and make the often excruciatingly difficult search for water and fuel. In practice, in order for the 'poorest of the poor' to be reached, almost iron will is required as well as a very strong political commitment on the part of the government concerned, a commitment which usually means that issues of equity (the 'equality' of the famous triumvirate of values of the French Revolution: Liberty, Equality, and Fraternity) are a top priority for the government.

Thus, I would maintain, food-aid-giving bodies should not simply shunt school feeding programmes off to one side because the very poorest of children are not always served by schools or less formal educational institutions. The article by Levinger in this Digest has some interesting things to say about targeting food aid to schools in such a way to take better into account issues concerning the socio-economic status of School Feeding Programme beneficiaries and issues of equity.

5. *Are food-for-work programmes more economically justifiable than feeding programmes?*

Reply: This is an extremely difficult question to answer in any simple fashion. Development economists often tend to think that 'directly productive' projects, i.e. food-aid projects which foster, say, improved agricultural production or the building of infrastructure (roads, dams, erosion control) or the improvement of forests, promise better 'rates of return' and have more tangible effects on development.

For a contrary view, the following paragraph which appeared in the FAO journal CERES, November-December 1985, is instructive:

'Planners are another group not particularly enthusiastic about the mid-day meal scheme. Their argument is that the investment made in feeding, if directed toward agriculture and road building in rural areas, could help create a permanent infrastructure to bring greater prosperity to the families of the school-going children. They feel the mid-day meal scheme can at best be a stop-gap arrangement. But Dr. M.S. Adisesiah* of the Madras Institute of Development Studies points out that the obsession of the planners with core sectors such as roads, power,

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* Dr. Malcolm S. Adisesiah, now working at the Madras Institute of Development Studies (Tamil Nadu, India), was formerly Deputy Director-General of Unesco.

and agriculture to the exclusion of the immediate and crying problem of malnutrition is a topsy-turvy view of what constitutes the core sector of society's development. Dr. Adisesiah maintains that the real core sector is the human and social well-being of the masses.' (This is an example of a value judgement which is not camouflaged.)

In fact both international officials, and delegates to the governing bodies of food-aid-giving agencies often speak of the virtues of food-for-work and directly productive projects while denigrating the value of 'un-ending' feeding projects. That this is not a universal view even in the food-aid community is shown by the following quotation from an interview* with the Executive Director of the World Food Programme:

> 'When we are helping a very poor country, let us recognize that even if the programme goes on for 20 or 30 years, we are not helping the same people all the time. We are helping a new generation every year. If a country is very poor - and some of the countries we help really are - I cannot believe that is a bad thing. Even if the child may not get that much additional food as a result of our activities, the pressure on the family will be less.
>
> All the evidence shows that when people at the basic subsistence level have a little more resources available, they tend to use part of it for buying food. So I cannot say that I am upset when I hear that WFP has been helping a school feeding project for 15 years or 20 years, provided that it is in a very poor country and provided that the government is serious about its side of the equation. In all of our projects the government itself has to make an input, as does the community in school feeding projects.

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* This interview appeared in an article entitled "Twenty Years of WFP Assistance to Education and Related Fields (1963-1983)" in the *Notes, Comments...Unesco* (No. N.S. 138 of December 1983) issued by ED/EFD/UNF (Unesco's Unit for Co-operation with UNICEF and World Food Programme), pp. 5/6.

Of course, if it were in a middle income country I would be very disturbed indeed!'

It is certainly true that the lack of infrastructures in rural areas (infrastructures of all kinds, including those for social services such as health, education and training) is one of the important brakes on the development of rural areas where so many millions of the poor live in the third world. In passing it should be mentioned here that the pressing problems of the urban poor in the fast growing, very deprived urban areas of the developing world will have social, human, and extremely dangerous political consequences in the immediate future. To the best of my knowledge, too little has been done by food-aid planners to see how food aid might be beneficial, if it indeed can be, to the dwellers of urban and peri-urban shanty towns.*

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* See, for example, the paragraphs which appeared in a 1983 Unesco Publication (revised in 1985), *Water and the City, page 56.*

'In 1960 about a third of the world's three billion inhabitants lived in urban settlements. But by the turn of the century it is expected that this proportion will rise to half of a total population of just over 6 billion.

For third world countries, the implications are enormous in terms of providing adequate infrastructure as well as making available food [emphasis added] and employment for at least double the number of persons currently residing in urban areas. Problems are compounded by the fact that already today between one and two-thirds of the inhabitants of the large cities of Asia, Africa and Latin America live in squatter settlements with insufficient supplies of water and other amenities....'

In rural areas, well-planned food-for-work projects can be of help to improve the relatively large array of infrastructural works required which range from the need for erosion control terracing, the damming of water and preventing its pollution to the fight against the encroachment of deserts and the encouragement of subsistence farmers to use new methods which involve a temporary slowdown in the availability of food to their families. On the other hand, the arrival of large quantities of externally-provided food aid in rural areas probably has a number of dangers, some psychological.

For example, the provision of food aid as an encouragement to poor peasants to use other methods of cultivation in the hope that their production will rise is, I believe, a questionable use of food aid. An analogy (probably fraught with some error like most analogies) can be made with a badly run school feeding programme I once visited. I had asked the educational authorities of the city, a supermegalopolis in Asia, to show me one of their most deprived schools, and to the credit of the education officer who had been assigned to deal with my visit, she did indeed take me to a very poor and terrifyingly badly organized primary school in one of the poorest districts of a city which is famed for its general deprivation. There, I was told that the school meal was served at 1 p.m. or thereabouts, that is, just before the children (almost all who came from desperately poor families and almost none of whom received any food at home before coming to school) were sent home after the school's educational activities had ended. I asked why the meal was served at this time when it could not possibly alleviate short- or even long-term hunger which could affect learning. I was told that if the meal were served earlier, the children would run away before lessons had been completed. The school official who made this reply seemed unaware what a condemnation this reply was of the educational programme being provided in the school. I was aware that the reply might not have been complete, and that perhaps the very un-motivated teachers in this school, who

considered an assignment there as a sign of 'punishment', simply might not have wished to deal with school feeding matters in the middle of teaching activities. But it is probable that the reply: 'the children would run away if given the meal earlier in the day', did contain quite a lot of truth in it. For the children were probably aware that the chances of making much progress in the teeming slums in which they live were minimal, and that the learning experiences in the school were of very low quality. So it is quite possible that a major attraction for coming to school was that, after what must have been an un-ending morning, some food was served. I added that for an outside observer, it would seem that 'the game did not seem worth the candle'. It seems that if the educational programme was so un-inviting to children, then there was something seriously wrong at the school, and that it was a great waste of resources (especially of teachers' salaries, low as these were) to use schools as a funnel or conduit for feeding children rather than using the feeding programme to enhance learning activities.

Strangely enough, shortly after these lines on the poor urban school were written, a report from the same country came to my attention in which an account was given of a rural school feeding programme which served very poor children. This report also mentioned that many children in some schools would come to school only at meal times. Once again, the educational programme may be of doubtful quality, and/or the perception of the children or their parents may be quite accurate: the schooling which was being provided would not help the children or their parents sufficiently to offset, for example, the value of the children's labour, especially if subsistence agriculture was involved or in areas where the sad tradition of the exploitation of child labour from deprived groups is still generally practised.

This long discussion above on an urban school feeding programme has been made to show that the ultimate development effects of food aid (in this case the

development of human resources) should be constantly borne in mind when planning project (as opposed to programme) food aid. In the case of providing food aid to subsistence farmers in order to encourage them to use new and presumably better methods of food production (and this is essentially a matter of 'education' seen in its broadest form), it is crucial that the rural populations involved become convinced that the new methods are in and of themselves valuable and that food aid not be used as a kind of 'bribe' (an admittedly harsh word) to get them to change age-old and perhaps not very 'efficient' methods.

While the provision of commodities to poor peasants can have a fairly obvious disincentive effect on their efforts to grow food, in schools there is no evidence that the provision of a meal has a negative impact on learning except if, as mentioned above, the organization of the school feeding scheme is chaotic. And in a sense school feeding is also 'food-for-work' since children are better able to work in school after having eaten. In other words, just as there can be 'food-for-work', there can also be 'food-for-learning'. Much of the attraction of 'food-for-work' seems to be that the term suggests a concrete relationship between food aid and work (which is considered to be 'good'), whereas school feeding (as a term) does not. Such a view needs to be refuted.

Food-aid givers quite rightly hope that food aid will not last forever, but, in order for it to stop, agricultural production and rural amenities must be improved. Nevertheless, it does not necessarily follow that the introduction of food would be an appropriate means of causing change in agricultural practices. If the goal is to increase food production, then the provision of loans, the establishment of co-operatives, the introduction of good agricultural extension services, the provision of basic health and education services, changes in the land tenure system, all seem more likely to achieve the goal of better agricultural practices which would foster an increased supply of food for the very poor. The introduction of food aid in such a situation, unless very well planned and co-ordinated with many other inputs, runs the great

risk of not encouraging farmers to produce more and better food but to become dependent on the provision of 'free' food. For it should never be forgotten that in all countries rich and poor alike, farming is an extremely difficult profession and the endless hard work associated with it can be discouraged as much by the provision of ill-planned food aid as by the enticements of the supposed advantages of urban life.*

This being said, the above criticisms apply much less to food-for-work projects, the goal of which is to build needed infrastructure, rural roads, water-ways, storage units; in other words the role of food aid here is essentially the construction of physical infrastructure and not the fostering of the basic change of attitudes which is required to encourage peasants to change age-old methods.

6. *Why should precious international resources such as food from abroad be used for school feeding programmes rather than for directly productive or food-for-work programmes?*

Reply: Some aspects of this question have been discussed above. It should, however, be borne in mind that education is a basic human right. Almost all governments devote large sums of money to education; in some countries the percentage of the national recurrent budget used for education can be as high as 20% to 25%. Usually a large proportion of a ministry of education's budget is allocated to salaries for the teaching staff. For political and social reasons, it is extremely difficult for governments to cease providing educational services or to reduce its teaching

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* Some of the complexities of raising agricultural production, especially when subsistence farming is prevalent, are discussed in a recent article by Valale I. Chacko entitled 'Re-thinking Development Approaches in the World's Poor Countries' which appeared in Unesco's journal, *Impact of Science on Society*, No.142 (1986).

staff. So the provision of educational services represents in many developing countries a very heavy investment in funds and in human resources. An effective school feeding project, that is one that is well managed and is linked to appropriate educational experiences, can often ensure, at least in part, that the government's heavy investment in schooling is not wasted because the children in the schools do not have enough to eat.

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If this introduction has encouraged the reader to reflect on school feeding projects and perhaps on development assistance in general, the author will feel that he has succeeded. He hopes also that the other articles in this Digest will provide food for thought.

* * *

The author of this Introduction is Richard Loewald, a Unesco Senior Officer/Programme Specialist. He has, for nearly 20 years, been dealing with school feeding projects at Unesco Headquarters in Paris.

SCHOOL FEEDING AND DEVELOPMENT IN MADAGASCAR

by Claude Chicot

The author of this article, Mr. Claude Chicot, has held the post of Inspector of National Education in the past. He has worked in the French Ministry for Co-operation where he was responsible for pedagogical research. Mr. Chicot has acted as a Unesco Expert and has undertaken numerous missions to Africa and Asia on Unesco's behalf. Mr. Chicot's other posts have included acting as Consultant on behalf of Unesco and UNICEF. The author has published many works in the field of education.

This is an *adaptation* for English-speaking readers of an article written in French.

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SCHOOL FEEDING AND DEVELOPMENT IN MADAGASCAR

by Claude Chicot

This article which concerns a school feeding project in Madagascar consists in large measure of a digest of the works and documents cited in the bibliography, put together for use in the training of teachers in six provincial seminars held in Madagascar in July-August 1985.

To these excerpts has been added a synthesis of the students' essays on their own personal work. The whole is presented in light of principal aspects of a Madagascan basic education project oriented towards the development of village communities. An attempt is made to outline the objectives involved and the strategies to follow of this basic project to which is linked a school feeding scheme. This school feeding programme is related to educational activities and also to the promotion of the 'productive' school as well as practical agricultural activities, the carrying out of productive work, research by pupils, the study of the environment ("étude du milieu" in French) and finally the supervision and evaluation of the project.

The Objectives of the School Feeding Project in Madagascar (1)

In 1984 the Government of Madagascar and the World Food Programme (WFP) decided to launch an experimental school feeding programme in primary schools. The United Nations Children's Fund (UNICEF) also collaborated, contributing, in particular, to the equipping of pilot schools and to the training of their staff.

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(1) Bibliography, a

The WFP-assisted project will help the Government to organize a school feeding programme, which while initially dependent on donated food, will, as time goes by, rely more and more on local production and which, by incorporating theoretical and practical teaching by means of school gardens, could serve as a model for all primary schools in Madagascar which are known as basic education schools. WFP's assistance was requested for an experimental period of five years during which 111 schools (those which already have school co-operatives) will each take part for three years, in rotation. This maximum figure had been chosen to allow the Government to have a pilot school in each of the 110 "Fivondronana" (districts) of the Republic.

The project will, simultaneously, support the Government's decentralisation policy which consists of transferring the responsibility for basic (primary) education to local communities. The hope is that the self-sufficiency of the schools would thus be assured through an increase in local production. The guiding principles of Law No. 78.040, dealing with the organization of the Madagascan education and training system, would in this way be put to a trial application; these principles include democratisation, decentralisation and "Malgachisation" (2).

This law contains provisions which may be paraphrased as follows:

- The creation of school canteens is customary at the headquarters of the "Fokontany" (villages), these are scattered and constitute an obstacle to establishing schools which provide a complete primary level cycle (art. 7);

- The costs of education and training are to be shared, depending on the level of education involved and on local needs, among the socialist enterprises and co-operatives, the decentralised collectivities (local government bodies) and the Central Government. Moreover, the school shall be 'productive', so as to contribute to covering expenses involved (art. 13);

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(2) The process of reform which is to ensure that activities are of relevance to the needs of the Malagasy (in French "Malgache") people

- Level I, or 'basic education', is to be generally available in each Fokontany (art. 15);

- The principal aim of such basic education which lasts five years (T1 to T5), is to awaken the child's mind to a practical knowledge of facts about local questions, then regional matters, and then national questions, thereby giving him/her a realistic perception of every day life. Such an educational programme would be the basis for the subsequent development of the student's education (art. 16).

The programme is designed to make maximum use of basic local agricultural production as a resource which would be to the advantage of the rural population of the region. Meals taken at school are one way of ensuring an adequate contribution to the children's nutritional needs. The activities of the school feeding project will be systematically linked to nutrition education, agricultural work and other activities which are productive or socially useful as elements in an integrated basic education programme.

Strategy and Management

The aim of the WFP assistance is to encourage the beginning of a process leading to a more or less greater degree of self-sufficiency by giving the schools the means to take full charge of their school feeding scheme from the outset of the project. To this end, WFP is to deliver wheat to the Régie Malgache des Monopoles Fiscaux (RMMF) and the RMMF will provide funds equivalent to the value of the WFP-provided commodities for on-the-spot purchase of rice or other basic commodities and vegetables which will be used in the school meals.(3) The purchase of local food, it is foreseen, should, to the greatest extent possible, be made in the area where the school is located. Thus, produce should be obtained, for example, from school farms, agricultural co-operatives or from local farmers. This should make it possible to avoid the logistic difficulties which would be posed by the need to transport

(3) A similar procedure exists also in the case of food aid provided to schools in draught-stricken areas of Kenya.

large quantities of basic foods to all regions of the country. Moreover, it is hoped that local farmers will be encouraged to produce food in the required quantities, once they have an assured outlet for their harvest.

Each group of participating schools will benefit from food aid over a period of three years, on a gradually diminishing basis. In the first year a complete ration of rice and vegetables will be provided; this will be reduced to 70% of requirements during the second year, and then to 50% during the third.

As WFP assistance is scaled down, parent-associations and the community will gradually take over more responsibility for the purchase of food stuffs which would be paid for with funds derived from the association's contributions and/or those to be generated by productive and, it is to be hoped, income-producing activities; these purchases will cover 30% of the needs during the second year, and 50% during the third. Subsequently, parent-associations and the community will take over the school feeding programme completely.

The following aspects of community management of the school feeding project were discussed during seminars held in 1985: administrative measures, receipt of foodstuffs, storage, local purchase of food, preparation and eating of the meals, participation by local authorities.

School Feeding and Education (4)

One basic concept concerning the Madagascan school feeding programme is that it should serve as a support for learning/teaching. A programme of school meals obliges a school, in fact, to participate in activities which occupy considerable periods of time of pupils, teaching staff, the community and - especially - parents. However, the more the formal aspects of education [learning/teaching] and the daily routine activities of the school are linked, the more the educational programme is likely to serve effectively the needs of children throughout their lives.

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(4) Bibliography, b

The question is to know how to get the best out of these school feeding activities in order to reinforce the acquisition of knowledge and to modify behaviour, attitudes and values.

The implementation of a school feeding programme may involve many of the following activities:

(i) the supply of installations and equipment : construction of food stores, kitchens, refectories, the provision of running water and the establishment of a school garden, possibly the building of a poultry house, and/or a rabbit hutch, the building and equipping of a workshop or making use of existing space for practical work, etc.;

(ii) receiving food supplies;

(iii) production and/or purchase of food by the pupils, parents and the community to supplement donated food and subsequently to be a substitute for much of the donated food;

(iv) stocking of provisions in the storehouse : taking precautions against theft, destruction or deterioration of the food (rodents, insects, damp, etc.);

(v) management of the commodities: stock accounting, cash accounting, keeping of stock-lists, establishment of periodic reports to the Ministry of Education and to WFP;

(vi) preparation of meals in the kitchen: establishment of menus, as balanced and varied as possible, preparation of meals, cooking;

(vii) service by pupils in the refectory and their acquisition of good table manners and notions of hygiene, appropriate behaviour, sociability, etc.; and,

(viii) ensuring the cleanliness of the kitchen and refectory, washing up and putting away of utensils and crockery.

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In the pilot schools, these activities are to be carried out by the following teams:

(i) The project administrators, at the various levels of the educational system. Their role includes the conception, planning, financing, supervision and evaluation of the project;

(ii) The teaching staff, whose task is to oversee the children during meal-times, ensure that conditions of hygiene are adequate, help in preparing the meals, direct the related practical work and integrate it into the whole of the curriculum, lead the parent-teacher associations, and help the head of the school in maintaining contact with the community;

(iii) The pupils, as members of the school cooperative, are not to be just passive beneficiaries of the school feeding programme, but should help with the work as required: preparation and serving of meals, fetching of water and wood (fuel), cleaning of equipment and utensils, helping in working out menus, etc., as well as undertaking productive work for their cooperatives;

(iv) The parents, in association with the school's staff, have the main responsibility for finding funds for the school meals scheme. These parent groups are to take part both in carrying out the school meals scheme and in encouraging the school and the community to produce additional food; and,

(v) The community as a whole can provide help in the form of money, goods or services. In particular, competent people can be recruited who are capable of helping the teaching staff to direct the productive activities (agricultural workers, artisans, etc.).

School feeding is sometimes seen solely as a social-service undertaking. The objectives of the Madagascar project do indeed include this aspect, but in addition comprise a contribution to learning experiences (which

is the "raison d'être" of a school) - not only in the directly linked fields of nutrition and health education but also in other school subjects. The basic hypothesis is that the refectory, the kitchen, the garden, the stores, the workshop, etc., where the children take part in various forms of practical work and give free rein to their curiosity, their need to be creative and to express themselves, their natural tendency to move around, their desire, if encouraged appropriately, to co-operate with their fellow pupils - all these areas which allow for active participation by pupils - should be considered as 'laboratories' for their cognitive, psychomotor and emotional development.

The 'Productive' School (5)

The project, as we have seen, seeks to make the school feeding programme self-sufficient by means of income-producing undertakings within a community framework. The school thus becomes a kind of 'production unit' in the education field.

Another educational project in Madagascar containing a component of co-operative production is already functioning: the "education project for development in the rural environment TEAFANA (Tetik'Asa Fanabeazana ho Fampandrosoana ny eny Ambanivohitra)" has, among its objectives, the stimulation of interest in pupils in productive activities, thus allowing the school to assume, in part, the costs of the educational programme. Moreover, there is a long tradition of school gardens, meals and school co-operatives in Madagascar.

Furthermore, the introduction of productive work into education is less a total novelty than a sort of 'return to early beginnings'. In traditional African society, education or learning was inseparable from the general activities of the community: work, festivals, rituals. Learning for each age-group thus had a characteristic of overall 'socialisation', including the preparation of a boy or girl for their respective future roles as men and women in productive work according to the traditional division of work between the sexes.

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(5) Bibliography, c

The programme of productive work in schools in Madagascar has two aims: (a) to introduce school children to ways of improving their lives and their environment; and (b) to undertake remunerative work. To attain these objectives, collaboration is essential among such various groups as children's parents, the "fokonolona" (village assembly), the teachers and the technical staff available in or near the locality where the school is situated.

The programme of productive work can be divided into the following eight categories:

(a) agriculture and farming and simple animal husbandry

(b) artisanal manufacture and repair work

(c) health, hygiene

(d) clothing, care of (household) linen

(e) cookery, nutrition

(f) habitat - care of the school and the home

(g) social and cultural activities, sport and leisure

(h) research

Productive Agricultural Activities (6)

The 37 pilot schools of the first group (being assisted by WFP in the period 1985-1988) are all situated in rural areas, and their present productive activities are essentially limited to work in the school garden or fields. Also, the increases in production proposed by teachers, parents and school co-operatives mainly concern agriculture and the raising of livestock. We may, therefore, expect to see agro-pastoral activities being given a definite priority in the project.

Obviously, the major part of the resources necessary for self-sufficiency of a school must come from an increase in productivity on the part of the adults. Sight should not be lost of the fact that the primary objective of the children's agricultural activities remains the acquisition

(6) Bibliography, d

of a mastery of appropriate agricultural/horticultural techniques and those of simple animal husbandry rather than the achievement of maximum productivity. The range of techniques taught should, however, cover the entire range of present and potential agricultural activities of the "fokontany". The 1985 programme should in the future, therefore, be adapted to local needs on the basis of information already gathered to which should be added more specific data from further studies.

The general objectives of school garden activities of the pupils may be summarised as follows:

(a) to motivate the child towards agricultural tasks;

(b) to accustom him/her to team work;

(c) to demonstrate the interest and possibilities offered by development work;

(d) to teach systematic techniques of agriculture and raising of livestock;

(e) to acquire theoretical and practical knowledge of market-gardening, vegetable/fruit growing, and simple manufacturing practices as advocated by the rural development bodies. In this way it is more likely that the children will, on leaving school, be able to fit without too much difficulty into the rural world which constitutes their environment;

(f) to make the school a centre of community leadership for surrounding population, more particularly as regards:

- good agricultural techniques
- the use of selected seeds, fertilisers and phyto-sanitary products
- the distribution of seedlings and seeds (vegetables, fruit trees, food-yielding plants, etc.);

(g) to put the child in touch with the realities of production;

(h) to foster the creation of school co-operatives which are financially sound;

(i) to familiarise the child with the problems of the working and management of his/her co-operative;

(j) to create an educational tool which will allow for a multi-disciplinary approach to the study of the environment.

These general objectives have been spelled out in detail in the form of specific objectives, describing precisely what pupils ought to be capable of doing at the end of each of the five years of study of the basic education cycle. This "exit profile" has two phases:

- a phase of sensitization, orientation and initiation (first- and second-year classes);

- a phase of training in agri-horticultural techniques and of preparation for working life (third, fourth and fifth years).

In point of fact, participation in the work and management of the school co-operative is aimed at developing a sense of initiative while at the same time preparing the pupil for a better understanding of how to run a family farm efficiently.

The Carrying Out of Productive Work (7)

The setting up of a programme of income-producing work which could benefit the World Food Programme (WFP)-assisted school feeding project implies obtaining full agreement on the aims of the operation from the partners involved. These objectives are based on the aims of the Government's policy of democratisation, decentralisation and Malgachisation and are set out in the plan of operations of the WFP-assisted project: provision of a food supplement, education for development, and community self-sufficiency.

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(7) Bibliography, e

In co-ordination with the decentralized local authorities, three institutions contribute to the establishment of a school-related programme of productive work which is integrated into community development activities: the school co-operative, the parent-teacher association, and working groups made up of students.

The objectives of the school co-operatives are as follows:

(a) to encourage in the children a spirit of mutual aid and co-operation;

(b) to provide a permanent point of contact between the school and the surrounding social (and physical) environment, and in particular, with the parents, thus creating a link for co-operation between children and adults;

(c) to encourage team-work among the children and to give them experience in taking group decisions;

(d) to provide the children with knowledge relevant to the daily activities they will undertake upon leaving school: agriculture, small-scale animal husbandry, basic technology (carpentry, simple mechanical/electrical work), basket-work, sewing, hygiene, home-making, management of small farm budgeting, etc.;

(e) to maintain and improve conditions at school: improvement of classrooms and surroundings, care and improvement of the library, the school museum, play material, etc.;

(f) to organize sports days, exhibitions, study outings, excursions, etc.;

(g) in general, to plan and organize all activities likely to stimulate and train children to participate fully in the social and economic life at the school itself, or jointly with parents, other adults and administrative and technical services.

In addition to the school co-operative, each school is encouraged to create a parent-teacher association where this does not already exist, which is rare. The school should in any case assist the association in attaining the following objectives:

(a) providing information to parents about the education being given to their children, and on how they can help in this;

(b) obtaining the active participation of parents in the effective running of the school and in activities which may be decided upon by the school for its expansion and improvement so as to amerliorate living and working conditions (for example, establishing a school canteen);

(c) providing parents, via the teaching staff and pupils, with certain kinds of knowledge and techniques (hygiene, nutrition, technology, etc.);

(d) participation of parents in the betterment of the economic and social situation of the community through, for example, their involvement in the school co-operative.(8)

The co-operative organization of productive work at schools is facilitated by a sharing of tasks among the pupils, based on the use of "working groups". Each class is divided into groups, on the basis of voluntary choice, personal affinities, and sometimes the proximity of pupils' homes. Each group appoints its own leader, gives itself a name and symbol, and eventually acquires a group identity.

Apart from the educational advantages stressed by many authors, this group-method aids in the carrying out of practical work: it permits the maximum use of infrastructure and equipment, and allows for flexibility

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(8) The parent-teacher association (P.T.A.) and the school co-operative (S.C.) each have an elected Committee (President, Secretary, etc.) and bye-laws (and therefore are legally recognized entities), thus allowing them to conduct financial operations.

in the use of out-of-school educational resources (one group may visit a local artisan, another may work on a nearby farm, another carry out a survey, while yet another may set up in the classroom a plan of the school premises, etc.).

In a class of 40 pupils, the number of groups usually varies between 5 and 8, according to the diversity of work to be accomplished and local conditions. Experience would seem to prove that the choice by the children of their leaders is most often judicious. In the best cases, the group leaders turn out to be valuable collaborators, planning together the productive work of their class under the discreet eye of the teacher.

The introduction of productive work inevitably poses the problem of technical competence, more or less insoluble in a traditional school structure where the teacher is supposed to know everything. Rather, if all goes well, a new type of teacher/pupil/community relationship should emerge. On the one hand, teachers and pupils together organize learning activities which arise from the necessity to resolve production problems; so the teacher helps the child in his search, while at the same time he or she searches also. On the other hand, these activities permit - and call for - both the knowledge and skills of parents as educators and producers, as well as recourse to neighbouring technical services (agriculture, health, public works) as elements of support and as sources of know-how. Moreover, the teachers of the various classes are able themselves to specialize according to their own interests and their personal aptitudes, and so "educational teams" can be constituted and be specifically responsible for one or another of the various school activities: simple animal husbandry, upkeep of the school, sewing, sport, study projects, etc.

Just as the practice of productive activities often implies a breaking up - very positive in itself - of the classroom structure, productive activities call for a rearrangement of the school timetable. In particular:

(a) the time required for setting up and putting away material for each session which includes preliminary explanations and final summing-

up, taking out and putting away of tools, movement between the "laboratory" and the classroom, suggests that only one session per week, per class, of about two hours, is recommended;

(b) the integration of practical work with the study of the environment, so as to improve this environment, is considered in many countries to be important enough to devote a similar amount of time (two hours) to further classroom lessons on the study of the environment;

(c) meals in the school canteen can provide an opportunity for educational activities which may enhance in an important way the value of the traditional mid-day break;

(d) at present in classes operating part-time (i.e. on a shift system), the limited time available results in the virtual disappearance of practical activities. However, the fact that all pupils participate in school meals may make it possible to include some practical work at the beginning or end of the half-day of school;

(e) certain activities in the field of agriculture or farming are difficult to reconcile with school holiday breaks. This problem is solved in several countries by voluntary rota duties carried out by members of the school co-operative and/or of the parent-teacher association during these periods.

The problems posed by identifying what tools are needed, by the purchase or hire of such tools, their use, care and storage, are many, serious and often complicated; these constraints merit careful study, for they have been a cause of failure in a number of instances.

Research and Leadership (or "Animation") (9)

The study of the environment, in the light of the 1985 Madagascar programme, should provide the child with an opportunity for active observation. The directives on the teaching of traditional knowledge stress the "need to provide for outings, studies, experiments, before the classroom lesson"; those which concern the study of the social environment specify that insofar as possible the children should be taken or sent out into the field, as it were - so that they can observe and verify what they are being taught in the classroom.

The project being conducted by the Government with the collaboration of the World Food Programme allows and calls for, at the same time, systematic recourse to surveys or studies made by the children themselves. The children are provided with a stable organizational framework to accomplish this, namely the working group, the school co-operative and the parent-teacher association, as well as a familiar and extensive field for enquiry/research, i.e. the life of the school and the community. Also an additional benefit is the active participation of many in the community in the promotion of the well-being of the children.

The customary techniques for simple "research" by pupils (some times called the enquiry method) of the surrounding social and physical environment are well known, and their educational advantages virtually uncontested. It does happen, however, that some adults see in such activities only a children's game in which they join with more or less good grace according to their mood and to how much time they have at their disposal. Here we are concerned with something quite different, since methodical gathering of information on the environment is as indispensable for action by adults as by children, and in a certain sense even sparks it off, as we shall see. From this point of view there is no difference between the "research" or enquiry of the children and studies undertaken by adults - even social science professionals. (10)

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(9) Bibliography, f, Le Boterf

(10) These paragraphs owe much to the work by Guy Le Boterf: "Enquête-participation et animation", Culture et Developpement, Paris, 1970

These techniques, are in fact more and more frequently used today in the field of development (economic, social and cultural). There even exists a kind of "universe of enquiry" ("univers de l'enquête"), to use the expression of Guy le Boterf; he believes that a new cultural situation exists in such spheres as industry, religion, education, economics and politics. It is not unusual to see a public or private institution make use of a sociologist, in order to try to understand a new situation of which it has no basic knowledge.

Generally speaking, classic sociological research has used the following pattern: the applicant (a private or a public body) decides to find out more about a certain environment. It approaches a centre for sociological research, specifying its needs and objectives. Such a centre then carries out the research, collates the information, and sends this information in the form of a report to the client who can, if he wishes, take appropriate action by making use of the results of the research done.

No doubt traditional types of psycho-social research tend to allow for a better planning and organization. However, according to Le Boterf, this type of research is of limited value.

Le Boterf and other contemporary writers therefore advocate an approach in which the researcher takes an active part in the social milieu instead of trying to be only a "neutral observer", and the population also takes an active part in the research. This method is known as "participatory research" (in French "l'enquête-participation"), and is based on two fundamental hypotheses:

- all educational activities and methods which aim at the development of an environment, or of a social group, must of necessity, if they are to be effective, elicit the active participation of the social groups living in the environment with which the research process is concerned;

- the capacity for a community to resolve its own problems, i.e. to improve the social environment, can be stimulated if the information gleaned from

participatory research is sent back to the population involved in the form of appropriately written research reports; that is, if there is effective feedback.

Based on various experiences of putting into practice "participatory research", Guy le Boterf pinpoints four stages:

1st phase: determination of the objectives of the research based on a preliminary general "diagnosis" of the situation.

2nd phase: involvement of the population :

- transmission to the population of information gathered during the diagnostic phase of the research;
- participation in the preparation of material for the enquiry (e.g. joint preparation of a questionnaire);
- setting up of the participatory structures.

3rd phase: participation by the population in the research work (surveys and activities leading to change with the active participation of those concerned).

4th phase: dissemination of the results, and development of a plan of action to be undertaken by means of a comprehensive presentation to the population of the research results and the working-out of a development plan by the population.

Seemingly, the ultimate aims for Madagascan education as stipulated in the objectives of Law No. 78.040, and the strategy of the WFP-assisted project, would lend themselves particularly well to a style of research analogous to this type of "participatory research". The question is in any case worth discussing. What can be said, by reference to Le Boterf's four-phase procedure, is that:

(a) as regards Phase 1, the objectives of such research would be more or less those of the project, and the general diagnosis phase would

largely take into account material contained in a document on the community, a kind of monograph for each Fokontany, the preparation of which is suggested below;

(b) participatory structures exist: school co-operatives, parent-teacher associations, working groups, and an educational "research" team;

(c) it may be advantageous for each working group to split into teams of two or three pupils to deal with the questionnaires, interviewing, observing, etc.; in this case it is to be hoped that a methodical division of labour among the groups of the various aspects of the enquiry will allow for a sustained rhythm in the research work.

As far as "participatory research" is concerned, the teacher - within the framework of the "research" team - is not just a researcher; he is also an "animateur" (or facilitator) who contributes to the development of a project based on the wishes of the group. The group can determine its own objectives and appropriate methods for implementing them; it (the group) can determine what changes would be required in the milieu being studied.

The Study of the Environment (11)

In line with the spirit of Madagascan curricular ideas, which give a major place to the study of the environment (what is called in the French-speaking world "étude du milieu" - literally "study of the milieu") with a view to improving this environment, two procedures were examined during the seminars for the teaching staff held in 1985.

The first concerns the introduction of the students to the techniques of enquiry for research purposes. The teachers felt that the preparation of a study or monograph on the school and its surroundings, the "Fokontany" (village,

(11) Bibliography, g

hamlet or district covered by the school) would allow at the same time for methodical training in the collection of data for the development of the project, and for the establishment of a sort of community 'log book'. By means of simulation exercises, groups of teachers attending the training course eventually developed a prototype plan for the "monograph", divided into six parts:

1. Our school,
2. Geography of our Fokontany,
3. Economy of our Fokontany,
4. The inhabitants of our Fokontany,
5. The development of our Fokontany, and,
6. A diary on our Fokontany.

A second aspect of the study of the environment is to facilitate integrating, pedagogically speaking, the productive activities of the school into the whole curriculum. It was proposed that in addition to a weekly, two-hour session of practical work, there should be also a period devoted to the "study and improvement of the environment" (two hours also), so that four hours per week would thus be allotted to the theoretical and practical study of the environment. A pattern of integration has been worked out. It includes an inter-disciplinary approach to the skills to be acquired such as written and/or oral expression, comprehension, self-improvement and participation in community development activities, such as the school cooperative, collaboration and co-ordination with out-of-school partners, as well as undertaking economic, social and cultural projects.

Such project activities constitute an application of the new (1985) official Madagascan basic education curricular programmes. These include the following provisions (12):

(a) it is a question of programming by objectives (general and specific), formulated in terms of pupils' conduct in order to allow for evaluation;

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(12) Bibliography, g

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(b) education activities are to be integrated, and pupils urged to resolve concrete problems of self-sufficiency by making use of what they have learned at school and in the community. In other words, to "use" what has been learned in the various subject-matter fields of the curriculum as a source for solving problems by combining, as the pupil sees fit, acquired knowledge and experience;

(c) the methodical observation of the environment, including the use of simple research techniques, constitutes a point of departure for integrated education, and the improvement of that environment is its culminating point;

(d) educational themes relating to the social realities which pupils must deal with serve as a link between the subject-matter disciplines and real life, on the one hand, and between the various academic disciplines themselves on the other;

(e) to facilitate the task of the teachers, in the first and second years, the study of the Madagascan language is the focal point for integrative educational activities; and the study of the environment ("étude du milieu") serves a similar role of integration of learning experiences in years three, four and five; and,

(f) finally, each of these weekly subjects (language and environmental study) becomes a 'unit of work' to be used by the teacher as a resource for teaching/learning of oral and written expression, techniques of analysis, and application.

Monitoring and Evaluation of the Project (13)

Unless a mechanism for monitoring and evaluation of a project for social improvement is foreseen, it is

(13) Bibliography, h

impossible to know whether or not a project has attained its objectives and has been of benefit to the target group, or whether it (the project) has not, perhaps, on the contrary, strengthened existing inequalities. Fortunately, a monitoring and evaluation mechanism is foreseen in the Plan of Operations of the WFP-assisted project (preparatory phase: creation of a supervisory system to allow for automatic on-going evaluation). The analysis of this mechanism for evaluation which Judith Edstrom, Regional Adviser in Evaluation at the UNICEF Regional Office in Nairobi, Kenya, has undertaken, thus seemed to be worth presenting to those responsible for the food-aid project.

In the first place, monitoring must be distinguished from evaluation. Monitoring refers to day-to-day activities, and its purpose is to alert those responsible, as early as possible, to concrete problems related to starting up activities - for instance, delay in the arrival of external contributions, such as tools, vehicles, financial help for re-training, etc.

Evaluation has a more complex aim and concentrates on the general aims and specific objectives measured according to clearly established criteria. It can thus lead to significant changes of strategy, whereas monitoring identifies day-to-day constraints for which the remedies are usually obvious (for example, lack of cement for building work), even if they are not always easy to put into practice.

It is possible to construct a framework for establishing a monitoring and evaluation system. One prior condition to permit the systematic measurement of the results of a project is in having defined the project's objectives clearly; for example, the ultimate aims of democratisation, decentralisation and Malgachisation are difficult to measure, whereas the aim of producing 30%, then 50%, then 100% of the food for the school meals service is easy to specify and allows for establishing a clear relationship between inputs (outside contributions) and outputs (products) of the project. It is therefore indispensable to identify the causal links between means and ends, in order to be able to follow and understand the transformation of the resources (inputs) and the foreseen outcomes of the project, or changes to be caused by project activities.

The four principal links in this transformation chain are as follows:

(a) the inputs: these are the resources made available for the project in order that it may attain its objectives. These resources may be physical (provision of vehicles, cement, construction material, fertilizers, seeds, books, personnel, vaccines, etc.) or financial (granting of credits); they may also consist of services or activities (training courses) which facilitate the transformation of the physical inputs into results;

(b) the outputs or results: these are (i) the physical results produced by a project, for example the number of houses built, the kilometres of roads repaired, the acreage of land irrigated, the amount of fertilizers and seeds used by the farmers, the number of co-operatives created, vaccinations carried out, and, (ii) the services rendered, for example in terms of the number of people trained, the number of domiciliary visits, by new personnel taken on, and by loans granted;

(c) the effects (objectives): these are direct and immediate consequences of the programme outputs, e.g. higher crop yields, increased enrolments, safe water, changes in level of information, preferences or skills; and,

(d) the impact: this is the change resulting from the project, in, say, the living standards of the target-group or in the target area. This can take place at two levels:

(i) the individual or family level, including changes in income, housing, feeding practices, health - which constitute what is often known as the well-being of the individual; and,

(ii) the community level, which may include changes in the structure of the social services (health, for example), in the economic system (including production), or in social relations and types of communication.

In summary, if all goes well, projects may develop in the following way: the inputs produce outputs; the outputs cause results - which correspond to the anticipated objectives - and the results, in turn, have an impact on the target population.

Monitoring and evaluation of a project thus consist of:

(a) identifying indicators which allow for measuring changes in the four phases of the process: inputs, results, effects, impact;

(b) specifying what source of verification will be used to measure variations in the indicators;

(c) explaining the hypotheses which underlie the project.

This leads us to Table 1 below, which will permit the setting up of a system for the continuous monitoring and evaluation of a socio-economic development project.

These matrices in Tables 1 and 2 made it possible for the teacher trainees in the short course to set up a system for the continuous monitoring and evaluation of the school feeding project:

(a) Turning to the matrix in Table 2 itself, the four levels of objectives: A1, B1, C1 and D1 are to be found in official texts: the Charter of the Madagascan Socialist Revolution, Law No. 78.040 (Education), the Plan of Operations of the WFP-assisted project, and the Basic Education Programme of 1985;

(b) the variable indicators A2, B2, C2 and D2 have been defined according to the specific activities of the project: the school, the school feeding programme, productive or socially useful work, the study of the environment, community development, scholastic results, etc.;

(c) the hypotheses of work are derived from what is stated, explicitly or implicitly, in the objectives. For example, the hypothesis underlying the objective of opening school canteens is the existence of a presumed correlation between feeding and educational output.

The teacher trainees who participated in the training course carried out, in succession, the following tasks:

(a) the matrix was filled in (see Table 2);

(b) the indicators A2, B2, C2 and D2 were set out in detail (7 for A2, 20 for B2, 39 for C2 and 12 for D2);

(c) bearing in mind the fact that it was a matter of evaluating the progress of the project at the pilot-school level, the indicators that concerned the other aspects of the school feeding project were dealt with: for example, the tonnage of wheat landed at Toamasina, which is the responsibility of WFP, or the utilisation of vehicles, which is incumbent upon the Government;

(d) the remaining indicators relate to the following five objectives:

I. the school canteen

II. the productive school: agriculture

III. the productive school: other income producing or socially useful activities

IV. education for development

V. democratisation, decentralisation, Malgachisation;

(e) for each indicator, ways of appropriate verification have been specified: (V - direct verification by the evaluation), (D - examination of existing documents), (M - Monograph);

(f) one column deals with evaluation. Each indicator should be given a letter, from A to E, according to whether the result is judged excellent (A), good (B), fair (C), inadequate (D), mediocre (E).

What emerged from the work of the six seminars resulted in the preparation of a form to be used for the quarterly evaluation of each of the pilot-schools; this form has been used by the authorities since January 1986 and the results indicated by means of this form also allow for the presentation of an annual prize for the best pilot-school.

Conclusion

The experimental nature of the project as research, its management, its educational dimension for community development and the possibility of its being used as a replicable model, justifies a careful and methodical approach and study of its development; the quarterly evaluation system should be helpful in facilitating this.

The teachers who participated in the training course, on the whole, understood better the implications of the project and the challenges involved, and they realized that mastery of a wide variety of the tasks enumerated above was essential. The teacher trainees were asked to evaluate the seminars they attended through the use of a form. They linked their agreement to the objectives of the project to concerns about such constraints as: whether the needed political will and support would exist at all levels; how to "sensitize" the various partners in the enterprise; whether on-going training would be implemented; whether equipment and teaching/learning material would be available; and whether visits to encourage staff would occur.

Finally, it should be recalled that the substance of this article is based on experience gathered from, and material prepared for, the special short courses for educational staff involved in the school feeding scheme.

Table No. 1. Framework for the setting-up of a monitoring and evaluation system

Objectives	Verifiable indicators	Source of verification	Hypothesis of work
Impact (aim) A1	A2	A3	A4
Effects (objectives) B1	B2	B3	B4
Outputs C1	C2	C3	C4
Contributions from outside: D1	D2	D3	D4

Source: USAID, project Evaluation Guidelines, Third Edition, Washington, M.01026.1, May 1973

Table No.2 - Evaluation matrix for the school feeding programme

(worked out by the trainees in conformity with Table No.1)

A1 -Democratisation -Decentralisation -Malgachisation	A2 community self-sufficiency (-the school canteen (-installations (-equipment (-educational material	A3 -direct verification: V -documents: D -monograph: M	A4 -political will at all levels -positive correlation education/development
B1 -the productive school -education for development	B2 -productive work -curriculum & teaching methods -functioning of community structures	B3 V, D, M	B4 -infrastructure and social structures in place -positive correlation nutrition/education

Table No. 2 (continued)

C1 -purchases with the funds generated by the provision of WFP wheat -opening of 111 canteens -complementary production of food, then production of food to substitute for donated commodities	C2 -accounting for purchases -school meal service activities -accounting for productive activities by the school	C3 V. D. M.	C4 -funds generated by WFP-provided wheat remitted to P.T.As. -school meal service installations ready -school feeding personnel ready to begin work

Table No. 2 (continued)

D1	D2	D3	D4
WFP: -7513 tons of wheat -372 tons of fish -496 tons of oil -6 lorries UNICEF: -kitchen equipment -refectory, material for practical work ("travaux pratiques") -seminar, training	-tonnage of WFP shipments -use of vehicles -physical inventory of material -number of UNICEF trainees trained -number and qualifications of national staff -transport & warehousing	V. D. M.	-external contributions arrive on the spot at the right time -training programme is ready

Table No. 2 (continued)

Government: -resp. for implementation -personnel -installations -unloading, transport, warehousing for WFP-provided commodities			

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SCHOOL FEEDING PROGRAMMES : MYTH AND POTENTIAL

by Beryl Levinger

This article by Ms. Levinger appeared originally in the Unesco Journal **Prospects** (Volume XIV, No. 3, 1984). We are grateful to the Editor of **Prospects**, for allowing us to re-issue this article in this Unit's (The Unit for Co-operation with UNICEF and WFP) Digest. A few minor editorial changes have been made for this Digest version; and an annex as well as some research design matrices have been added (**Annex I** and **II**) - both are taken from another report prepared by the author for the United States Agency for International Development (USAID).

The author, Ms. Levinger, is an educator with experience in developing countries -- especially in Latin America. When this article was written, she was a member of the research staff of Teachers College of Columbia University (New York City). Currently, Ms. Levinger is Assistant Executive Director of CARE, an international NGO (non-governmental organization) which has been involved in school feeding programmes (mainly bilateral ones) for many years. The views expressed in this article are those of the author and do not necessarily represent those of Unesco, CARE or USAID.

SCHOOL FEEDING PROGRAMMES : MYTH AND POTENTIAL

by Beryl Levinger

Many countries today are concerned with achieving universal primary school enrolment. Meeting this challenge depends fundamentally on reaching two seemingly simple yet extraordinarily elusive goals: getting all school-aged children enrolled, and assuring that once in school, children make satisfactory academic progress (defined here as completing the primary school curriculum in the prescribed number of years). Teacher training programmes, curricular revisions, new school construction efforts and enrolment campaigns are typical components of a strategy to provide all citizens with a primary school education, and the literature is filled with analyses and evaluations of their effectiveness. Relatively less attention, however, has been given to another tool that is often employed in these campaigns - the school feeding programme (SFP).

Two principal arguments have been advanced on behalf of SFPs. First, the provision of a snack or meal serves to increase school attendance and enrolment. Food, in this context, is thus seen as a means to offset some or all the costs of attending school, including expenditures for books, fees, uniforms, supplies and transport, as well as a child's forgone earnings. A second argument in support of SFPs is that they improve children's ability to benefit from instruction by removing hunger or nutritional deficiencies as obstacles to learning. Implicit in this argument is the belief that by and large SFPs reach a nutritionally needy segment of the school-aged population with a ration that is nutritionally adequate to overcome these needs.

These arguments lend support for the three objectives most commonly associated with SFPs: first, to increase school enrolment and attendance among school-aged children; second, to improve the nutritional status of children in school; and third, to improve the cognitive or academic performance of these children.

This study is concerned with two issues. First, through a review of the literature, it examines and assesses the empirical evidence that exists to support the hypothesized relationships among SFPs, school attendance, enrolment and academic performance. Both the relationships and the methodologies used to posit the relationships are scrutinized. Second, it uses this examination of empirical evidence to distil SFP design recommendations.

IMPACT ON SCHOOL ATTENDANCE AND ENROLMENT

Four principal types of studies have been conducted that assess the impact of SFPs on attendance and enrolment. Examples of each, culled from an extensive literature review, will be presented.

Retrospective Analysis Studies

Three studies were identified that looked at the impact of programme disruption or suspension on attendance. One found a positive relationship between SFPs and attendance; the other two reported little clear-cut evidence of significant impact.

The strongest relationship was presented in the 1982 evaluation by Gall, Eckroad and Stanfield (1982a, 1982b) of a programme operating in the Dominican Republic with commodities donated by the United States. This study illustrates the approach used in retrospective SFP research and is also significant in terms of its findings.

The authors examined the impact of a sudden SFP termination on primary school enrolment using data provided by teachers from Santiago Rodriguez, a relatively poor region in the north-west of the country. The data examined were both impressionistic and quantitative. A sample of teachers of unspecified size provided comments on how they viewed the impact of the programme's termination. There seemed to be uniform agreement among teachers that enrolment had been adversely affected. The investigators then examined enrolment records over eleven years for four primary schools in and around Santiago Rodriguez, three of which were small and rural. These records covered an eight-year period

when the lunch programme functioned and three years (1980-82) when it did not. They found that in the 1980-82 period enrolments had dropped by 23.4 per cent. Teachers were then asked about any possible causes of this decrease. They attributed the enrolment decline exclusively to the termination of the lunch programme. The authors conclude: 'In the aggregate, it appears that approximately one-fourth of the children who would otherwise be in school have dropped out.'

Their data, however, suggested that the effects of the programme's termination appear to be much greater in rural schools and for females. The differential effects of terminating the lunch programme for boys and girls were particularly noteworthy in rural areas. There, in the first grade, for example, female enrolment declined by 43 per cent while the comparable figure for males was only 19 per cent. This suggests that SFPs may be an important tool for reducing both rural/urban and male/female enrolment ratio differences.

Comparative Studies

Six studies were identified that examined the impact of SFPs by comparing data on attendance and enrolment between SFP and non-SFP schools. Most were inconclusive. Two will be singled out here for particular attention because their methodologies are fundamentally sound and their findings have special significance.

Cotten's 1982 study of an SFP in Haiti (Cotten, 1982), the first part of a longitudinal research project, was derived from a data base of 100 schools and 1,936 primary school children.

Cotten found significant differences between programme and non-programme children with respect to home environment. On the average, programme children came from a better socio-economic environment. This finding confounds many of the relationships examined, including school attendance. There was a strong correlation between home environment and attendance in both SFP and non-SFP schools. Thus, the investigator concluded that the significant difference between high attendance in programme schools and not so high attendance in non-programme schools could be explained

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by differences in the home environment as well as by differences in programme. He suggests that this finding demonstrates that cross-sectional data are not sufficient for measurement of impact; longitudinal studies would be more appropriate. These data also highlight an important consideration in SFP design - targeting (i.e. selecting the intended beneficiary population). Where sites are selected on the basis of accessibility, parental pressure and availability of kitchen or food storage facilities, inadvertent targeting may take place - wealthier communities are selected to the exclusion of poorer ones.

Another significant comparative study on the attendance-related impact of SFPs was conducted by Ellis et al. (1974a, 1974b, 1975). This investigation compared fed to non-fed schools in Colombia, Kenya and the Philippines.

Of the fifteen programmes reviewed by the research team in the three countries noted, three were judged as 'effective on attendance' and ten were considered 'probably effective on attendance'. The remaining two were assessed as 'ineffective on attendance'. Among the variables examined were the type of feeding, the age of the programme, how high food fees were, the frequency of interruptions to the programme, whether food was taken home, how many days per year the food was served, the sponsoring agency and annual estimates of per-recipient costs. Of all these characteristics, several seemed to distinguish the more effective operations where 'effectiveness' refers not only to school attendance, but also to nutritional status, school performance and food habits (as measured through a student 24-hour recall survey). These traits include: (a) having a large number of feeding days per year and few feeding interruptions; (b) having hot lunches as opposed to other forms of feeding; and, (c) having less food taken at home. Equally noteworthy are the factors that did not seem to make much of a difference: the age of the programmes, the food fees, the programme sponsor or costs.

The authors note that, in general, SFPs must be very carefully targeted. Their data suggest that programmes are more effective in stable, poorer, rural areas. They attribute this to the fact that in such zones SFPs may be a relatively greater incentive for increased attendance. A strong structural effect can operate in school programmes,

they surmise, so that a population of those on the borderline of their own development scale - the poorer people among those who are able to send children to school - are especially likely to benefit. They also found that the best predictor of student attendance was household possessions. Children from the better-off homes attended the most. This provides additional support for the notion that economically borderline children may appear to derive the most benefit from SFPs. Interestingly, the next most potent predictor for attendance was nutritional status which, of course, is supposed to be influenced by an SFP. It appears that when SFPs have an impact on nutritional status, a useful synergy is created so that attendance benefits are also produced.

What then can we conclude from comparative studies? Together, they suggest that SFPs may be most effective in meeting their attendance-related objective in settings where attendance is not already high and where children come from relatively low socio-economic status (SES) backgrounds. In such cases, feeding may indeed be an incentive. The studies also point to the need for programme regularity to achieve an impact on children's school-going habits. These findings have serious implications for targeting both to need and to the probability that programme regularity can be maintained.

Non-Comparative Studies

Eight studies covering eleven different countries were identified that examined the impact of SFPs on attendance and enrolment using primarily impressionistic data drawn from teachers. Most of these studies failed to provide systematically for control groups. Likewise, data are neither retrospective nor longitudinal. The major contribution of these studies, consequently, is limited to what they have to say about the conventional wisdom concerning SFPs rather than the insights they contain regarding methodology or impact. Significantly, seven of the eight noted a positive programmatic impact on attendance and enrolment, while only one drew mixed conclusions. Because of their methodological imprecision, they will not be reviewed here.

Determinants of School Attendance and Enrolment Studies

Unlike the other research reviewed thus far, the two studies identified that fall under this heading do not deal specifically with the impact of SFPs. Rather, they represent an attempt to examine the interrelationships among a wide variety of socio-economic status-related variables. Included in the analyses are important insights into why some children are likelier than others to attend school. They also deal very specifically with how school enrolment is influenced by nutritional status. **Malnourished Children of the Rural Poor** (Balderston et al., 1981), one of these works, describes the findings of the Berkeley Project on Education and Nutrition. The overall investigation presents findings on: (a) the effects of nutrition and health on school participation and performance; (b) the relationship between literacy and agricultural productivity; and, (c) the relationship between women's education and family size. The data base for these analyses came from two related research projects. The first was a longitudinal study carried out by the Institute for Nutrition in Central America and Panama (INCAP) and funded by the National Institute of Child Health and Development between 1969 and 1978. The other was done by RAND (through Rockefeller Foundation funding) in 1974-75.

The investigators found that in Guatemala, decisions to enrol a child in school appear to be affected by the parents' need for the child's help, by parental perceptions concerning the value of schooling and by the child's apparent competence. In the one village where work for children was readily available and where the parents' educational background was relatively low, school enrolment was affected positively by family affluence but not by apparent differences in the child's weight, height or verbal proficiency. In the other villages, where parents had relatively more education and work was not so readily available for children, the factors of height and verbal performance at the age of 7 were positively and highly significantly related to school enrolment.

When family economic groups were separated, it was found that for children of semi-subsistence farming families decisions on enrolment appear to be positively determined by the affluence of parents, the size of the child, and

by the child's position in the family. Children born earlier in the family order were more likely to attend school than those with older siblings. In general, the researchers concluded that when economic and family background factors were held constant, the size and health of children acted as independent, positive determinants of children's school attendance and performance. The size of a child is in effect a proxy for prior nutritional status.

There are several implications of these findings for SFP design. First, it seems likely that where the need for child labour and availability of employment opportunities for children coexist, SFPs are likely to act as incentives for school attendance only when the ration size is large enough for parents to view feeding as a significant income transfer programme. In such circumstances, it might even be desirable for children to take part of the ration home.

Second, the impact of any SFP seems to be the function of an interaction between the environment in which it operates as well as the features incorporated into its design. To have an impact on attendance or enrolment in a very marginal community, an SFP must incorporate special design features that may not be needed for a borderline community. And, once a threshold is crossed (as in the case of the countries analysed in the Ellis et al. study), impact on enrolment or attendance is likely to be relatively small.

Third, the Berkeley team found very different patterns of school enrolment for boys and girls with girls' work in the household being highly valued and therefore serving as a significant disincentive to school enrolment. This tends to suggest, once again, the need to look at differential impacts of SFPs on attendance between boys and girls. Even relatively small overall enrolment gains may be highly significant if new female enrolment accounts for much of the change.

Finally, the finding that the size and health of children act as independent, positive determinants of children's school attendance and performance has important ramifications for SFPs. Since size is a proxy for nutritional status, this suggests that where SFPs can be

designed to have an impact on nutritional status, impact on attendance and performance will also be achieved. Thus, proper targeting and the provision of an adequately sized ration become design issues not only related to changes in nutritional status, but to attendance and school performance outcomes as well.

IMPACT ON SCHOOL PERFORMANCE

Cognition, Nutrition and School Performance

What is the potential of SFPs to facilitate cognitive development? Three general observations provide a useful backdrop for this discussion.

First, cognitive function may be defined as the ability to learn categories; process and structure information; and learn and react to social and environmental cues. It includes the ability to ask appropriate questions and give appropriate answers within a given environment and to identify and solve relevant problems. It embraces general conceptual ability, appropriate actions within a given culture, and the mental adaptiveness needed to entertain new categories and see new possibilities. Mild to moderate malnutrition, while probably not causing primary learning deficits, does appear to alter processes associated with cognitive function. Passivity, apathy, shortened attention span, reduced short-term memory, failure to acclimatize to repetitive stimuli, and a lag in the development of sensory-integrative capacity, are all associated with mild to moderate malnutrition. These dysfunctions prevent children from taking maximum advantage of the learning opportunities available to them in their environments. Not surprisingly, children with protein-calorie malnutrition tend to function at reduced levels of intellectual development and academic achievement. Children appear to adapt to malnutrition by seeking out more quiet and restful activities. The contribution of SFPs to cognitive development must be assessed in this context.

Second, mild to moderate malnutrition acts synergistically with social and environmental factors. The risks for a malnourished child, living as he or she

does in a culture of poverty, are multiple, interactive and cumulative. However, both human and animal studies show that a developmentally facilitative environment can alleviate the potentially harmful consequences of early malnutrition. Reversibility and remediation are possible when the child's environment is manipulated to make it more conducive to his cognitive growth. Although improvement in a child's diet alone can lead to cognitive changes, greater intellectual development can be achieved when the child's diet as well as his psychological and social environment are enriched. These findings suggest that SFPs can only reach their full potential for stimulating cognitive development when they are designed as part of a broader intervention to address developmental lags or deficiencies in students.

Third, a school-aged child's nutritional status exerts significant influence on his academic performance. In Wilson's study of Guatemalan children (in Balderston et al., 1981), for example, current diet was the single most significant predictor of classroom achievement. Likewise, hunger seems to cause inattentiveness and distractability and thus is likely to influence school performance and learning. Hunger, of course, is not the same as malnutrition. SFPs that are successful either in reducing a child's feelings of hunger or improving his nutritional status are likely to facilitate cognitive development as it has been broadly defined here (i.e. mobilization and maintenance of attention; development of sensory-integrative capacity; exploratory, problem-solving behaviours; memory).

Studies on the Relationship between SFP Participation and School Performance

Four studies were identified that examined the impact of SFPs on school performance. Taken as a body, they are inconclusive. Two illustrative efforts will be discussed here. Roy and Rath (1970), in their evaluation of the school lunch programme in Orissa, India, compared the academic performance of fed to non-fed boys. Using examination scores, they found no significant differences between the two groups.

The authors note that student performance in examinations and the proportion of failures are indicative of a school's academic standards. They therefore analysed the distribution of student scores on the examination administered nearest to the time of the study. Virtually no difference was observed in the distributions of scores achieved by fed and non-fed children. The failure rate for both groups was also nearly equal when data were taken both for entire schools and for individual grades.

These findings, however, are difficult to interpret, for several reasons. First, the authors fail to report whether the examination was standardized or teacher-made. If it was teacher-made, the results are not surprising, given most teachers' tendency to use their own classes as reference groups for grades rather than objective criteria. This practice usually leads to fairly constant distributions of students' marks so that a normal curve is maintained even when groups differ quite notably from one another. Thus the proportion of individuals on the 'honour roll' in a school where students are cognitively advanced is not dramatically different from that of a school where many pupils suffer cognitive deficits. Children tend to be judged in relation to one another particularly in situations where the teachers are not pedagogically sophisticated.

Even if the examinations were standardized, the scores alone cannot help us judge the efficacy of the SFP intervention vis-à-vis school achievement. The fed schools had more tribal students and a smaller number of upper caste children than non-fed schools. Since socio-economic status exerts a significant influence on school achievement, and since the student bodies in the fed schools had a lower socio-economic status than those from non-fed schools, it would be expected that without the intervention, students from non-fed schools would score higher on standardized tests. Therefore, it can be argued that the SFP was successful by raising the level of academic achievement obtained by the fed, lower socio-economic status students to that obtained by the more advantaged non-fed children. The lack of a statistical difference in scores, thus, may be one measure of the programme's success in providing equality of educational opportunity for children regardless

of their social or economic background. This discussion underscores the need for researchers to control for socio-economic status when comparing academic achievement or cognitive development for fed and non-fed students.

Cotten, in examining the impact of the SFP in Haiti on cognitive development, constructed a 'quality of education' index to compare the educational opportunities offered to students in rural and urban areas. In Haiti, as in most other developing countries, the quality of education was significantly lower in rural zones. Cotten found that in a rural environment there was a significant difference between mean scores obtained on a test of intelligence (the Raven) by children who were well nourished as compared to children who exhibited wasting. In urban areas, on the other hand, where the availability of external influences on a child's mental performance is greater, there was no significant difference in cognitive performance between the well-nourished children and those showing signs of wasting. This discrepancy points to the need for intellectual and nutritional stimulation for children living in environments that do not facilitate children's development in order for SFPs to meet their cognition-related objective.

Cotten also investigated the relationship between hunger (as opposed to malnutrition) and intellectual performance. Citing research by Keys, he hypothesized a relationship between hunger ('a psychological and physiological state resulting from insufficient food intake to meet immediate energy needs') and a classroom behavioural pattern characterized by irritability, apathy and similar dysfunctions. Individual children in the sample survey who came to school without breakfast were identified, and their performance on Raven was compared to average performance for the school.

It was observed that within the SFP schools, there was a highly significant difference between the performance levels of the two groups. Children who came to school without breakfast did markedly worse than their less-hungry counterparts. However, in schools without an SFP there was no significant difference between the two groups. No explanation of this finding for non-SFP schools is offered. Perhaps the inclusion of more private schools (with their

attendant higher quality of education) in the non-SFP sample is the cause. If so, this, too, would suggest that quality of the learning environment and diet interact in the determination of a child's intellectual ability. When the environment is developmentally rich, the intellectual stimulation available can compensate for some of the effects of hunger and, quite possibly, malnutrition. This finding also highlights the need to research whether school breakfasts should be offered instead of or in addition to mid-day meals.

Two additional studies, both methodologically sound in all respects, provide strong evidence for the proposition that nutritional interventions can improve school performance. Wilson's work in Guatemala (reported in Balderston et al., 1981) and Moock and Leslie's research in Nepal (1983). In the study on Guatemala, the child's total diet was the largest and most significant factor affecting a teacher's assessment of performance when all other relevant variables were controlled. This finding lends support to the thesis that current energy levels have an important impact on learning and performance even among children with comparable nutritional status and levels of ability. In the study on Nepal, taller children tended to be in higher grades than shorter children of the same age. This led the authors to hold that efforts to improve child nutritional status may have educational as well as health and survival benefits for the children involved.

With respect to the design of SFPs, several conclusions emerge. First, when the population to be served has a high incidence of protein-calorie malnutrition and little access to intellectual stimulation, the SFP intervention should be combined with a modest cognitive development programme to have optimal impact. A developmentally facilitative environment can alleviate the potentially harmful consequences of early malnutrition. Teacher training programmes targeted to schools where SFPs operate might particularly focus on simple techniques to help students maintain attention, improve memory, use the senses to gain new information and engage in active learning strategies.

A second recommendation concerns the selection of beneficiaries. Targeting to individual schools or geographic areas is preferable to targeting practices that focus on

specific children if more than nutritional outcomes are important. Aside from the fact that targeting within schools tends to promote ration dilution, the practice also dilutes such educational pay-offs as teacher participation or interest in SFP-related training, integration of feeding with cognitively-oriented activities and widespread parental involvement or contact with the school through its feeding programme. Inadvertent targeting can be avoided by developing clearcut criteria for identifying communities that are both cognitively and nutritionally at risk.

A third recommendation concerns ration size. SFPs are often defended on the grounds that they serve to draw students to enrol in school and that they encourage them to attend once enrolled. Once again the evidence for the claim is mixed and the methodologies employed in gaining the evidence are not of a uniformly even quality. However, it seems that the degree to which SFPs attract students is a function of many variables. Two of the most important are: (a) a comparison of the opportunity costs of school attendance compared to the market value of the food; and, (b) the probable return on a student's investment in education compared to the revised opportunity cost of schooling (where revised opportunity cost equals fees, books, uniforms and forgone wages minus the market value of the food).

Where the opportunity costs are high and the market value of the food is low, families are better off keeping their school-aged children at home unless it is likely that school enrolment will contribute to an enlarged stream of earnings in the future. Even in countries where fees, books and uniforms are minimal, the opportunity cost of schooling may be high if the child's labour can be gainfully used (or if it enables someone else to seek gainful employment, as in the case of a child who takes care of younger siblings so that her mother can work as a domestic in the town). The implication of this analysis is that ration size may be a powerful determinant of an SFP's ability to attract students in those countries where opportunity costs of schooling are high and the probable return on investing in just a few years of primary school is low. Full breakfasts or mid-day meals will be inducements to enrol whereas snacks probably will not draw more students.

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Conversely, in cultures where education has a clear economic benefit and where opportunity costs of schooling do not serve as a widespread barrier to enrolment, SFPs are likely to have little impact on attendance and enrolment. In these cases, snack programmes may be a more cost-effective intervention than full meal programmes for meeting nutritional and cognitive needs.

Finally, SFPs should be consciously designed to improve a school system's external efficiency by reinforcing more broadly based development objectives. Programmes that encourage community participation, supplementation and eventual phase-out of donated commodities, local production of foodstuffs and consistency between SFP and nutrition education messages will have the greatest educational impact.

SFPs have the potential to make a significant contribution to human resource development efforts. Additional research, careful planning and a broad view of both the educational and nutritional aspects of such programmes are needed if this potential is to be realized.

Designing School Feeding Programmes with both Educational and Nutritional Needs in Mind

In examing the literature on SFPs, it appears that often the potential impact of SFPs may not have been reached. This is so in part because many school feeding programmes were designed exclusively or primarily from the standpoint of nutritional rather than educational needs. Effective programme planning must be based on a careful examination of both sets of needs and how they relate to each other. In some situations, educational needs might be given a higher planning priority; in others, the reverse will be true.

In evaluating SFPs, greater clarity is needed concerning the relative priorities given to each objective. Where internal efficiency questions are of paramount interest, simple proxies for cognitive development are needed. Perhaps the rate of students successfully completing a given year of schooling (form/grade) might prove useful if such critical intervening variables as teacher quality, distance between home and school, prior education of the mother and family, and socio-economic status can be controlled.

Research is also needed to compare the relative impact of mid-day meals and breakfast programmes on school performance. Either a longitudinal approach within the same school setting or a comparison of matched communities might prove to be a useful framework. Once again, a pass/fail rate might be suitable in gauging cognitive development if intervening variables can be controlled. Any comparison between breakfast and mid-day meal programmes should also measure differential effects on school attendance.

Also, further research is needed to assess the impact of alternative distribution modes. For example, would a snack and a mid-day meal be a more potent combination

in terms of nutritional status, attendance and school performance than a breakfast and snack programme? To what extent can commodity levels be reduced without diluting an SFP's educational (as opposed to nutritional) benefits? These are all questions that require serious analysis and discussion.

The methodological difficulties of conducting good research in this area are numerous. The relationships between SFPs (the independent variable) and school attendance or performance (the dependent variables) are seriously confounded by a series of intervening variables that collectively may exert more influence on the hypothesized relationship than the independent variable alone. Adding to the difficulties of inferring relationships is the need to take into account seasonal variations that might influence school attendance and attentiveness.

For planners, however, the most pressing concern should be the identification of whatever other inputs are needed in combination with SFPs to promote educational change. Children do not live by bread alone, and while food is undoubtedly a necessary condition for healthy growth and development, it certainly is not sufficient. Only when SFPs are viewed as but one component of broader schemes to improve education will they be able to achieve their full potential as vehicles for improving the internal and external efficiency of school systems in LDCs.

A Proposal for Operational Research on the Impact of School Feeding Programmes

Do school feeding programmes increase attendance, improve academic performance and contribute to higher enrolment ratios? Up to now studies have failed to provide us with a conclusive answer to this question. Also such studies neglect, by and large, to relate impact to beneficiary population characteristics so we can draw a picture of those individuals for whom SFPs are most likely to make a difference. Clearly, what is needed is further research. Of equal clarity, however, is the need for a new approach to the problem of assessing programme benefit.

In what follows, the broad outlines of an operations research project on the impact of SFPs are sketched. Such an outline is intended not as a complete, self-contained methodological guide to inquiry in this area (which it most definitely is not) but to highlight the kinds of issues which must be systematically dealt with in order for policy-makers to answer three basic and interrelated questions: (a) What kind of changes do SFPs promote and for whom? (b) To what extent are these changes interdependent? (c) Given a particular set of ecological conditions, what is the ideal SFP design to promote improvements in enrolment, attendance, and academic achievement?

The justification for an operations research approach lies in five major weaknesses within the body of research on SFPs that is presently available. First, not a single study involved the use of baseline data collected prior to the beginning of the SFP. Thus, it is virtually impossible to assess the degree to which the programme prompted changes in the beneficiary population. Specifically, the lack of data on attendance rates, enrolment ratios and academic achievement before the SFP began leave us without a strong basis for inferences concerning the impact

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of the (SFP) intervention on these variables. Second, in only a few studies were such intervening variables as socio-economic status (SES) and quality of the educational environment adequately controlled. Thus, it is difficult to determine the extent to which differences are attributable to the (SFP) intervention itself or to dissimilarities in the sample populations. Particularly, in many of the comparative studies, the control and experimental groups were not really comparable. Third, data are generally reported in aggregated terms making it impossible to measure impact on groups of students generally deemed to be most vulnerable to nutrition-related problems: girls, rural children from landless families, ethnic minorities, children from incomplete families, and children from the most economically marginal households. Fourth, with the exception of Cotten's work in Haiti, the studies are not longitudinal (i.e. do not extend over a period of years) and therefore tell us nothing about how SFPs influence rate of change in the variables of interest, namely attendance, enrolment and academic performance. Finally, none of the programmes evaluated to date appears to be "state of the art". Thus, we cannot learn what the optimal impact of an SFP might be under very favourable but highly replicable conditions. In the case of a programme that seems to induce cognitively oriented changes in students, "state of the art" at the very least probably means that the intervention design must incorporate a component concretely related to the desired cognitive outcomes.

These limitations impede the search for definitive answers to the three basic questions noted earlier. Let us look at each of these issues in turn and break them into a series of interrelated probing hypotheses that would form the agenda for an operations research project in this area.

The first question concerned the kind of changes SFPs promote and the characteristics of students most affected by these changes. The probing hypotheses associated with this issue include the following:

(a) **Enrolment Ratios**

Do SFPs lead to positive changes in school enrolment ratios? What are the characteristics of those students for whom SFPs do and do not constitute an inducement to enrol? Are SFPs effective in promoting enrolment among students deemed to be most vulnerable to nutrition-related problems?

(b) **Attendance Rates**

Do SFPs lead to improvements in school attendance among enrolled students? What are the characteristics of those students for whom SFPs do and do not constitute an inducement to attend? Are SFPs effective in promoting attendance among students deemed to be most vulnerable to nutrition-related problems?

(c) **Wastage/Drop-out Rates**

Do SFPs lead to reductions in the wastage rates * as measured by the proportion of students in the first grade (i.e. class of primary school) who complete the primary cycle in the prescribed number of years? What are the characteristics of those students for whom SFPs do and do not constitute an inducement to complete primary school in the prescribed number of years? Are SFPs particularly effective in reducing the wastage rate among students deemed to be most vulnerable to nutrition-related problems?

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* Wastage rate. For a primary school cycle of 5 years: number of students enrolled in the fifth class in y5 divided by the number of students who entered the first class of the primary school cycle in y1 where y1 = base year and y5 = base year + 5. Intermediate wastage rates can be calculated for y2 - 4 using this same approach.

(d) Improvement in Learning Ability

Do SFPs contribute to a student's increased ability to engage in the cognitive processes closely associated with learning (e.g., ability to concentrate and attend to instruction; short- and long-term memory; intersensory integration)? What are the specific cognitive processes most amenable to change through a school feeding intervention? What are the characteristics of those students who benefit particularly from SFPs in the area of cognitive development? Are SFPs particularly effective in promoting cognitive development among students deemed to be most vulnerable to nutrition-related problems?

(e) Improvement in Academic Performance

Do SFPs contribute to improvements in student academic performance? What are the characteristics of those students whose academic performance appears to benefit from the presence of an SFP? Are SFPs effective in improving the academic performance of students deemed to be most vulnerable to nutrition-related problems?

(f) Improvement in Nutritional Status of Students

Do SFPs contribute to improvements in student nutritional status? What are the characteristics of those students who derive greatest nutritional benefit from SFPs? Are SFPs effective in improving the nutritional status of students deemed to be most nutritionally vulnerable?

A second group of questions concerns the extent to which changes promoted by SFPs are interdependent or need to be interdependent? The first set of questions focused on six change variables:

- enrolment ratios;
- school attendance rates;
- wastage rates;
- intellectual development;
- academic achievement; and,
- nutritional status.

This second set of questions seeks to identify which (if any) of these variables is necessary (and/or sufficient) to promote change in the other variables under consideration. Examples of probing hypotheses that might constitute the research agenda in this area include the following:

(a) **Improved Nutritional Status: Increased Cognitive Development and Improved Academic Achievement**

For what segments of the school population is improvement in nutritional status a necessary and/or sufficient condition for increased cognitive development and improved academic achievement? For what segments of the school population is alleviation of temporary hunger without nutritional status change a necessary and/or sufficient condition for improved academic performance?

(b) **Improvement in Nutritional Status: Improved Attendance Rates**

For what segments of the school population is improvement in nutritional status a necessary and/or sufficient condition to improve school attendance rates? For what segments of the school population is alleviation of temporary hunger alone a necessary and/or sufficient condition for improved school attendance?

(c) **Improved Nutritional Status: Changes in Enrolment Ratios and Wastage Rates**

To what extent are changes in enrolment ratios and wastage rates dependent upon changes in nutritional status? Can the alleviation of temporary hunger alone contribute to change in these areas?

Matching the design characteristics of an SFP to a particular set of ecological conditions is the final aspect on which an operations research project ought to focus. Some probing hypotheses related to this issue and especially suited for inclusion in a research agenda include the following:

(a) Timing and Nature of the School Meal

For what settings would breakfast, a mid-day meal, snack or some combination of these feedings (e.g., breakfast and lunch) be most appropriate?

(b) School Feeding and Learning Activities

In what settings should feeding be integrated with a cognitively-oriented intervention?

(c) Under-nutrition: Short-term Hunger

In what settings should the feeding programme attempt to close the gap between average daily food intake and minimum daily nutritional requirements? Where should the programme attempt only to alleviate temporary hunger?

If this list of probing hypotheses constitutes the outline of an agenda for an operations research project, then attention must now be given to methodological issues including overall approach, sample selection and modes of analysis. What follows is a broad discussion of each of these topics.

To provide responses to the probing hypotheses noted earlier, an operations research project on SFPs must have three important characteristics. First, it should be longitudinal; rate of change over time needs to be measured. Second, it should assess the impact of alternative designs in a variety of ecological settings. Last, at least some of the designs tested ought to incorporate a cognitive component in order to assess maximum potential impact for "state of the art" programming.

The operations research project proposed here would be of a three-to-five-year duration, and would involve a wide variety of sites in one country; it would track a group of children who enter the first class of primary school in relation to attendance, wastage, academic achievement and nutritional status. In addition, data on enrolment ratios would be gathered for the period of the study. Ideally, the study should monitor the cohort of children in the first class of the primary school for

the number of years as the duration of the primary school cycle. However, since the bulk of attrition generally takes place by the end of the third class, it is probable that a shortened study period, while not preferable to one that coincides with the primary school cycle, would be adequate for discerning most of an SFP's impact on the variables under consideration.

Seven basic treatment programmes would be tested: snack only; breakfast only; mid-day meal only; snack plus cognitive intervention programme; breakfast plus cognitive intervention programme; mid-day meal plus cognitive intervention programme; and cognitive intervention programme only. A "no treatment" control group would also be included in the design.

The cognitive intervention programme, if it is to be replicable and appropriate to a wide cross-section of teachers in developing countries, must be easy to use and free from any dependence on materials that are expensive or difficult to obtain. For the purposes of this project, a flashcard programme of games built around the alphabet, numbers and vocabulary items matched with pictures seems appropriate. These games would be teacher-led, last an average of fifteen minutes daily, and, insofar as possible, be played in conjunction with the meal or snack activity. As students advanced beyond the first class of primary school, the games would, of course, become increasingly complex and could involve small groups of student players working independently of one another. Of course, a modest teacher training programme would be needed to mount the flashcard programme.

Each of the seven treatments would be tested in four different types of settings in order to assess how programme ecology acts as a mediating variable. These settings would be ranked from "most favourable" to "least favourable" through the construction of three indices, one for socio-economic status. It is expected that the "most favourable" environments would be placed between the fifty-first and sixty-fifth percentiles on each index, while the "least favourable" would fall below the twentieth percentile on all the indices where the frame of reference is a representative sample of schools within the target country.

In operational terms, a school would be placed in a given category if at least 60 per cent of the children in the first class of the primary school cycle fell within the specified ranges and if the majority of the remaining students fell within +10 percentile units of the specified ranges.

The socio-economic status (SES) index would be constructed to include family income, education of the father, education of the mother, physical characteristics of the family dwelling (e.g., number of rooms, presence or absence of latrines, roofing material) and presence or absence of key possessions (e.g., radio, bed, chair). The quality of education index would reflect teacher qualifications and school facility characteristics. Measures of teacher background include highest year of schooling completed, and years of teacher experience. School plant adequacy would be reflected in the ratio of total enrolment to number of school desks, the ratio of total enrolment to books in school, illumination, and occupancy density (number of students per square foot/metre of classroom space). Student-teacher ratio would also be included in this index along with the ratio of first graders to students enrolled in the last year of primary. The nutritional status index would be a simple comparative measure of weight for height.

In the table below, characteristics of the various ecological settings and the distribution of treatment programmes are summarized. It shows that the proposed project involves four distinct ecological settings, seven different experimental treatments and a total of 88 research sites. This relatively large number of sites is needed to ensure an appropriate mix of rural and urban schools, as well as an adequate number of children in the first class of primary school. Each cell in Figure 1 will include one urban school; the remainder will be rural. A sample of this size will also facilitate comparisons of impact on the basis of programme exposure (i.e. the number of days the programme actually operated at the school site) and differential programme impact on boys and girls. It is expected that schools with fewer than 20 students in the first class of the primary school cycle would be eliminated from the sample due to the longitudinal nature of the study and the need to have a reasonable number of subjects in the study's concluding phase.

It is recommended that both the breakfast and mid-day meal programmes be designed, insofar as possible, to provide students with approximately 30 per cent of minimum daily nutritional requirements. This may well involve the supplementation of donated commodities. The snack ration should contain approximately one half the nutritional value of the breakfast or mid-day meal programmes and should be served in mid-morning. Periodic data on the food consumption habits of students will be gathered to determine the degree to which the SFP is alleviating temporary hunger and the extent to which it promotes supplementation of the current diet or the substitution of SFP products for normally consumed foods.

The path analysis techniques used by a team which studied SFPs in three countries - Colombia, Kenya, and the Philippines - were reviewed. It was noted that a strength of this approach is that it provides a framework for testing the "fit" between the assumptions inherent in the design of an SFP and the actual conditions found in the field. This is achieved by enabling researchers to examine where the largest number of "incorrect paths" (i.e., unanticipated cause-and-effect linkages) lie. Given the nature of the operations research project proposed here -- an attempt to match a variety of ecological settings to alternate intervention designs -- this approach seems most appropriate.

Analysis of data will, of course, need to focus on more than how each intervention's impact differed according to the ecological setting in which it was tested. Comparisons will also have to be made that point up differences between boys and girls, rural and urban students, relatively younger, and older children in the class of the primary school cycle and students with more, versus less, exposure to the programme (as determined by the number of days the SFP actually was operational at the study site).

To conclude, probing hypotheses related to each of the three issues proposed for consideration are analyzed according to the relevant independent and dependent variables, operational definitions and the kind of instrumentation needed to investigate them. These examples

are offered to illustrate the breadth and complexity of the proposed operations research project as well as the wealth of invaluable information that would be generated through such an effort.

The one question remains: Is such a complex and presumably costly research effort worthwhile? The savings that will stem from a more cost-effective intervention programme will undoubtedly justify the initial investment many times over. Food is a valuable resource. Thus, it is important to ensure that the tension between what donor nations are willing to give and what recipient nations actually want - results in a positive sum game where all parties gain. With school feeding, this dilemma is minimized for it is one of a relatively small number of programmes that can satisfy the objectives of a broad range of constituencies from farmers in donor countries to planners dealing with developing countries. As such, SFPs appear to be the embodiment of win-win gamesmanship. Every effort must be made to assure donor and recipient countries alike * that this appearance is firmly rooted in fact. Otherwise both donor and recipient nations alike will become losers in the struggle to create conditions favourable to balanced development.

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* It cannot be repeated too often that an SFP requires very heavy investment of human and physical resources by recipient countries.

Figure 1
SAMPLE CONSTRUCTION OF OPERATIONS RESEARCH PROJECT
ON SFP IMPACT

Setting	Percentile Rankings On All 3 Indices	Snack only	Breakfast Only	M-d* Meal Only	Snack + Cognitive Treatment	Breakfast + Cognitive Treatment	M-d Meal* + Cognitive Treatment	Cognitive Treatment only	No Treatment	TOTALS
Most Favourable	65th - 51st	2	2	2	2	2	2	2	2	16
Moderately Favourable	35th - 50th	3	3	3	3	3	3	3	3	24
Moderately Unfavourable	20th - 34th	3	3	3	3	3	3	3	3	24
Most Unfavourable	below 20th	3	3	3	3	3	3	3	3	24
	Totals	11	11	11	11	11	11	11	11	88

* M-d Meal = Mid-day Meal

Figure 2

Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
1) Do SFPs lead to positive changes in school enrolment ratios? What are the characteristics of those students for whom SFPs do and do not constitute an inducement to enrol? Are SFPs effective in promoting enrolment among students deemed to be most vulnerable to nutrition-related problems?	SFP (presence or absence) SFP (intervention mode) SFP (efficiency)	Nutritional status; nutrition-related vulnerability; student background factors; school background factors	School enrolment ratio	a) SFP=snack, breakfast or m-d m* programmes served in school using a combination of donated commodities and locally purchased products or relying solely on one or the other. Breakfasts or m-d m* provide approximately 30 per cent of MDR (minimum daily requirements); snacks offer half this amount. b) School enrolment ratio = the proportion of students in a specified age cohort who are currently enrolled in school.	a) SFP Control Sheet = to monitor content, frequency and participation in SFP. b) Census Form = to determine size of cohort. c) Enrolment Data Sheet=to derive data on school enrolment from which enrolment ratios can be calculated. d) Student Case History Form = to assess the student background factors and degree of nutrition-related vulnerability.	Changes in school enrolment ratios will be correlated with each of the following variables: type of SFP nutritional status of students; degree of nutrition-related vulnerability; student background factors; nutritional status changes within students; and SFP efficiency and intervention mode. These

*m-d m = mid-day meal

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
(1) continued				c) Nutrition-related vulnerability = children at or below the 90th percentile weight-for-height or height-for-age norms and children from families with one or more of the following characteristics: rural and landless; one or both parents absent; economically marginal (below the 30th percentile in real income); ethnic minority. SFP intervention mode = one of the following: breakfast only; mid-day meal only; snack only; and each of the above combined with a cognitive intervention consisting	e) School Background Factor scale = to record and assess teacher qualifications and school plant adequacy. f) Student Height-weight Chart = form to monitor changes in weight-for-height over time. Nutritional status comparison of weight-for-height with locally or internationally accepted norms. g) Student Background Factors Scale = sex of of student; family socio-economic-status	correlations will be derived periodically throughout the study period commencing with a baseline measure administered to children in the first class of the primary cycle. Regression analysis will be used to identify the proportion of variance attributable to each of the independent and intervening variables.

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
(1) continued				of 15 minutes a day of structured games using flash-cards with numbers, letters and vocabulary items. SFP efficiency = $\frac{\text{Number of days programme functioned}}{\text{Number of days in school year}}$	(SES) as reflected by the education of child's father and mother; physical characteristics of the family dwelling; and absence or presence of targeted possessions including a radio, bed and chair; student IQ as measured by Raven. h) School Background Factors Scale - qualifications of teaching staff (e.g. highest grade completed; number of years teaching); school plant adequacy as	

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
(1) continued					measured by ratio of total enrolment to number of desks and books; occupancy per square foot of space and adequacy of illumination; pupil-teacher ratio; and average wastage rate between first and last year of primary cycle.	

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
2) Do SFPs lead to improvements in school attendance among enrolled students? What are the characteristics of those students for whom SFPs do and do not constitute an inducement to attend? Are SFPs effective in promoting attendance among students deemed to be most vulnerable to nutrition-related problems?	SFP (presence or absence); SFP(intervention mode); SFP(efficiency)	Nutritional status; nutrition-related vulnerability; student background factors; school background factors.	School attendance rate	School attendance rate = average daily attendance for 50 pre-selected days divided by average total enrolment on each of the 50 pre-selected days. Days pre-selected would not be contiguous to a weekend, holiday or vacation period and would be seasonally stratified. See #1 for other terms	All instruments noted in #1 and Student Attend-Form to record attendance as well as enrolment on pre-selected days.	Changes in attendance will be correlated with the same variables and analyzed in the same manner as described in #1.

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
3) Do SFPs lead to reductions in the wastage rate? What are the characteristics of those students for whom SFPs do and do not constitute an inducement to complete primary school in the prescribed number of years? Are SFPs particularly effective in reducing the wastage rate among students deemed to be most vulnerable to nutrition-related problems?	SFP (presence or absence); SFP (intervention mode); SFP (efficiency)	Nutritional status; nutrition-related vulnerability; student background factors; school background factors	Wastage rates	Wastage rate = for a primary school cycle of 5 years: number of students enrolled in the fifth class in y5 divided by the number of students who entered the first class of the primary school cycle in y1 where y1 = base year and y5 = base year + 5. Intermediate wastage rates can be calculated for y2 - 4 using this same approach. See #1 for other terms.	See #1	Changes in wastage rate (y2 - y5) will be correlated with the same variables and analyzed in the same manner as described in #1.

Figure 2
Selected Examples of Probing Hypotheses
for an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent Variables	Intervening Variables	Dependent Variables	Operational Definitions	Instrumentation	Comment
4) Do SFPs contribute to a student's increased ability to engage in cognitive processes closely associated with learning? What are the specific cognitive processes most amenable to change through a school feeding intervention? What are the characteristics of those students who particularly benefit from SFPs in the area of cognitive development? Are SFPs particularly effective in promoting cognitive development among students deemed to be most vulnerable to nutrition-related problems?	SFP (presence or absence); SFP (intervention mode); SFP (efficency)	Nutritional status; nutrition-related vulnerability; student background factors; school background factors	Cognitive development	Cognitive development = ability to concentrate and attend to instruction; ability to retain information in the short-and-long-term; ability to integrate stimuli and information obtained through various sensory modes.	Scale of Ability to Attend to Instruction* = students are individually given sequences of directives and tested on their ability to follow directions of increasing length and complexity. Example: Put the ball on the book (two behavioural steps, no qualifiers). Put the red ball on the book (two behavioural steps, one qualifier). Put the red ball on the blue book (two behavioural steps, two qualifiers).	Test scores will be correlated with each other as well as with the same variables and analyzed in the same manner as described in #1.

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
(4) continued					Short-term Memory Test* = an individually administered test in which students are asked to duplicate number, word and picture sequences presented by tester. Long-term Memory Test* = essentially the same test as above except that students duplicate each sequence after 90 seconds of an intervening activity. Portius Maze Test = Although originally designed as an IQ test, the items can be administered in an untimed fashion and scored somewhat differently so that eye-hand co-ordination difficulties do not influence assessment.	

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
(4) continued					If these adjustments are made, this instrument will measure foresight, ability to plan, attention, and inter-sensory integration capacity. See also instrumentation on items # 1-3. * - tests to be specially developed for this project.	

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
5) Do SFPs contribute to improvements in student academic performance? What are the characteristics of those students whose academic performance appears to benefit from the presence of an SFP? Are SFPs effective in improving the academic performance of students deemed to be most vulnerable to nutrition-related problems?	SFP (presence or absence); SFP (intervention mode); SFP (efficiency)	Nutritional status; nutrition-related vulnerability; student background factors; school background factors.	Student academic performance	Student academic performance = ability to perform essential school-related tasks as evidenced by scores on standardized tests and normal progress through a school system (i.e., one year of academic credit for each year spent in school)	Boehm Test of Basic Concepts for children in the first and second classes of the primary school cycle; mathematics and vocabulary portion of test similar to Stanford or Metropolitan Achievement tests (i.e., instrument with multi-levels) adapted for local use. See also instrumentation in items #1-4.	Changes in school performance as measured by appropriate achievement test and academic progress will be correlated and analyzed in the same manner as described in # 1. The Boehm Test of Basic Concepts measures essential concepts needed by children to cope with classroom instruction.

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
(5) continued						It correlates highly with a child's ability to learn reading and mathematics/facts. It contains 50 basic relational concepts (e.g., same/different; right/left; more/less; first/last).

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
6) For what segments of the school population is improvement in nutritional status a necessary and/or sufficient condition for improved cognitive development and academic achievement? For what segments of the school population is alleviation of temporary hunger without nutritional status change a necessary and/or sufficient condition for improved academic performance?	Nutritional status; ------ alleviation of temporary hunger	Student background factors; school background factors	Level of cognitive development; student academic performance	See #4 and # 5	See # 4 and # 5 Food Consumption Habits Inventory : Record designed to measure food intake of students over a 24-hour period. It is especially sensitive to the quantity of food consumed prior to participation in an SFP by recording time and level of intake.	Changes in nutritional status will be correlated with changes in cognitive development and academic achievement. These changes will be derived periodically over life of study commencing with a baseline measure. Likewise, presence or absence of hunger will be correlated with changes in student academic performance.

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
(6) continued						Regression analysis will be used to identify the proportion of variance attributable to each independent and intervening variable.

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
7) In what settings would breakfast, mid-day meal, snack or some combination of these feedings be most appropriate?	SFP intervention mode (breakfast only, mid-day meal only, snack only); SFP efficiency	Student background factors; school background factors	School enrolment ratios; school attendance rate; nutritional status; level of cognitive development; student academic performance	See items # 1 - # 5.	See item 1 for descriptions of SFP Control Sheet; Census Form; Enrolment Data Sheet; Student Case History Form; School Background Factors Scale; Student Background Factors Scale; School Background Factors Scale and see items # 4 and # 5 for remaining instrumentation.	SFP intervention mode will be correlated with each of the dependent variables while controlling for the intervening variables. Regression analysis will be used to identify the proportion of variance attributable to each independent and intervening variable.

Figure 2
Selected Examples of Probing Hypotheses
For an Operations Research Project on School Feeding Programmes

Probing Hypotheses	Independent variables	Intervening variables	Dependent variables	Operational Definitions	Instrumentation	Comment
8) In what settings should feeding be integrated with a cognitively oriented intervention?	SFP intervention mode (breakfast only; snack only; midday meal only or any of the above plus cognitive intervention). --- SFP efficiency	Student background factors; school background factors	School enrolment ratios; school attendance rate; level of cognitive development; student academic performance; nutritional status	Same as previous item	Same as previous item	Same as previous item

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USING AVAILABLE DATA TO MONITOR THE EDUCATIONAL OUTCOMES OF A SCHOOL FEEDING PROGRAMME IN NIGER

by Richard Sack

This article, by a Paris-based educational consultant, Richard Sack, deals with a school feeding project in Niger. Mr. Sack has considerable experience with educational questions in Third World countries and has served as a consultant to the World Bank, the United States Agency for International Development and Unesco. He is the author of numerous articles in the field of education.

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USING AVAILABLE DATA TO MONITOR THE EDUCATIONAL OUTCOMES OF A SCHOOL FEEDING PROGRAMME IN NIGER

by Richard Sack

INTRODUCTION

The hypothesis that school feeding programmes (SFP) would have an impact on educational results appears reasonable, intuitively well founded and, indeed, is normally one of the implicit assumptions on which school feeding programmes are based, especially when they are conceived as development-oriented investments. In this context it is rather surprising that there is no consistent empirical evidence pointing to a relationship, or even an association, between school feeding programmes and educational results. The importance of food aid has been discussed in the educational context as well as its role as an important policy variable within educational policy considerations. (1) However, these discussions are only rarely supported by empirical evidence which, as it happens, is seldom available and costly (in time and money) to collect.

There is a sizeable literature on the relationships between nutritional status, school achievement and intellectual function. (2) This literature distinguishes between early (i.e., pre-school) nutritional status and current (i.e., in-school) nutritional status. From these studies it is concluded that: "the nutritional status of the student is a variable that determines, in part, educational performance. The under-nourished child, the anaemic child, or the child who goes to school without eating after an overnight fast, does not maintain a classroom behaviour conducive to optimal learning." (3) Such conclusions reinforce intuitive notions, but do not advance our understanding of the marginal effectiveness of in-school interventions such as SFPs.

Levinger indentifies four studies that examined the impact of school feeding programmes on school performance.

The results of these studies are mixed and, on the whole, inconclusive. One study done in India found no significant differences in examination scores between two groups of students whose major difference was purported to be participation in an SFP. However, this study was plagued with methodological problems, especially the nature of the examination scores. Another study examined the impact of SFP on cognitive development in Haiti and found highly significant differences in performance levels between children who came to school without breakfast and those who ate before school. However, these differences were found only in those schools where there were SFPs, whereas in those without SFPs no such differences were found between the two groups of children. No explanation for this discrepancy is given. Two other studies, both methodologically sound, are reported by Levinger, one done in Guatemala and the other in Nepal. The Guatemala study concluded that "the child's total diet was the largest and most significant factor affecting a teacher's assessment of performance when all other relevant variables were controlled." The Nepalese study found that "taller children tended to be in higher grades than shorter children of the same age," suggesting that "nutritional status may have educational as well as health and survival benefits for the children involved." (4)

The purpose of this paper is to demonstrate, using the case of Niger, the applicability of commonly available educational statistics in order to examine the relationship between SFPs and educational results. Full-blown studies that attempt to examine this relationship are generally costly, both financially and in terms of the time they can consume. The basic tenet of this paper is that a first approximation at evaluating the educational impact of SFPs can reasonably be performed, and at minimal cost, by careful, systematic and imaginative examination and analysis of existing data sources. (5) This is not an attempt to assess causality. Rather, it represents an exploratory approach to the use of existing data in order to see where they can point and how they could be used in the evaluation, monitoring and/or management of SFPs.

METHODOLOGY

First of all it is necessary to define the operational meaning given to the concept of educational results. The choice of educational variables used to evaluate the impact of an SFP is based on two considerations:

i) that the variables reflect generally recognized educational outcomes, such as attendance, grade point average, examination and/or test scores, and repetition and drop-out rates; and,

ii) that there should be data on the variables that are used and these data should be readily accessible.

Given these considerations, and in light of the educational statistics readily available in Niger, the operational meaning for "educational impact" that will be used here is the results of the primary school examination (the Certificat de fin d'études du premier degré -- CFEPD) and repetition and drop-out rates.

Results of the CFEPD examination are available in Niger for every school district and are published in each district's annual report on a school-by-school basis. Drop-out and repetition data are also published for many districts. Also, many of these reports identify the schools at which there is an SFP, even though only about half of the students enrolled in any particular school with an SFP would be actually benefiting from the programme.

The criteria used for selecting schools that could benefit from an SFP were two-fold:

i) a relatively large number of pupils from poor families; and,

ii) a sizeable proportion of children from nomadic families or from families living far from the school.

Within any one school, children were selected on the basis of their relative poverty and whether their parents were nomads and/or lived far from the school. This means that schools benefiting from an SFP are likely to have students from a somewhat lower socio-economic background than schools with no SFP. However, it should be kept in mind that such a statement takes on very relative proportions in a country where the primary school enrolment ratio is only 21%.

Armed with these data sources it is possible to establish the average CFPED scores for schools with an SFP and for those without an SFP, and like-wise for drop-out and repetition rates. This was done on a district basis, assuming that there were no great cultural, geographic or economic differences among the school-going population within any given district. And, since it was possible to identify the urban schools, it became possible to do an analysis for rural schools only.

Of a total of 1,728 primary schools in Niger, 230 had an SFP in 1983/84. It was possible to have access to the annual reports (1983/84) for districts in which 200 of these schools were located. This represents a total of 19 districts of the 38 in the country, but covers 87% of the SFP schools in most regions of Niger. This sample, which includes all schools in each of the 19 districts, covers 111,062 pupils enrolled in 1,019 schools; 20% of these schools have an SFP; 17% of the pupils in the sample are enrolled in schools with an SFP; and, the sample represents 44% of the total primary school enrolment in the country. Also the number of pupils enrolled in the 19 districts in the sample varied from 955 to 14,730 per district.

The unit of analysis used here is the school district. The data within each district are divided according to whether the schools have an SFP or not. In other words, for each school district there are two types of schools: those with an SFP and those without. In order to correct for the large discrepancies among districts in terms of the number of pupils, a weight factor was applied to each district so that in the statistical analysis they would have approximately equal weight.

RESULTS

Table 1 presents the statistical data available on a district-by-district basis. On the whole, Table 1 shows a success rate on the CFEPD of 22.5% for rural schools with an SFP as compared to 16.0% for rural schools without one. In spite of this result, which is globally positive, we find that in nine districts the schools without an SFP have better results. However, it should be noted that this is not a comparison between students benefiting from the SFP and those who do not, but between schools where there are and are not such programmes (and, in the former, only part of the student population benefits). In other words, the aggregate results of the CFEPD in schools with an SFP are better than in schools without one.

These results are of interest not only for the global picture they paint, but also for the discrepancies they show between districts. Why is the SFP associated with better results in some districts and not in others, all the while presenting an overall positive association with CFEPD success rate? There could be several answers to this question, such as: the SFP schools in some districts are systematically (for reasons of selection) of lower educational quality and/or draw students from much poorer backgrounds than the other schools; or, food delivery to the SFP schools in those districts where the SFP schools have poorer results could have been irregular or deficient.

This type of analysis -- and use of the available statistical data -- makes it possible to look into such matters which could be related to the detection of a diagnosis of problems of implementation. Such analysis could be of use for the monitoring of the implementation of SFPs since differential educational results could be an indicator of differential patterns of implementation. One result, therefore, of this type of analysis is its applicability to the monitoring and management of SFP implementation.

In order to have a more concise and systematic idea of the association between SFP and educational outcomes, two statistical analyses were performed on the (weighted) data which are presented in Table 1. Correlations were done between the two types of schools as well as a t-test for significance of differences between means. In both

cases, the analyses look at relationships between, on the one hand, schools with and without an SFP and, on the other hand, CFEPD results, repetition and drop-out rates for all schools in the district and for rural schools only. In other words, the independent variable is the fact of an SFP in a school, and the dependent variables are test score results, and the repetition and drop-out rates.

Table 2 shows the results of the t-test analyses of significant differences between means of the educational outcome variables separated into two groups according to whether or not the schools have an SFP. From **Table 2** we can see that the schools with an SFP have a significantly higher success rate on the CFEPD. Overall, the SFP schools have a success rate which is 10 percentage points higher than the non-SFP schools. When urban schools are removed from the analysis, the SFP schools have a success rate which is 11 points higher. However, it appears that the SFP schools have a slightly higher (2%), and significant, repetition rate than the non-SFP schools and that the drop-out rates between the two groups are the same.

Table 3 shows the results of the correlation analysis. We find results similar to those shown in **Table 2**. There is a significant correlation between the primary school examination and the fact of being in an SFP school, and this correlation is stronger when urban schools are factored out of the analysis. The correlations between repetition and drop-out rates and SFP are slight and suggest that there is little relationship between these indicators of internal efficiency and SFP.

Although there is no way in which these results can be interpreted as having causal significance, they do suggest that the fact of having an SFP in a school is associated with improved learning results (as measured by the CFEPD). What is particularly interesting is that there is no association between SFP and indicators of internal efficiency (repetition and drop-out rates). This could imply that the beneficial effects of an SFP in terms of educational outcomes can only be perceived in terms of long-term individual achievement (i.e. ability to graduate from primary school) rather than through measures of school efficiency -- the results presented above suggest that as an hypothesis.

CONCLUSIONS

The analysis presented in this paper shows:

i) that there is a statistical association between SFP and educational outcomes; and,

ii) that this association can be demonstrated by educational statistics which are generally available and regularly collected by educational authorities in many countries where there are SFPs.

Aside from the obvious advantage of being able to show a positive association between an investment in SFP and the desired developmental (in this case, educational) outcomes, the results reported here can be of use in demonstrating the potential utilization of available data for the evaluation, monitoring and management of SFPs.

Of particular interest would be the use of such data for the monitoring and subsequent management of programme implmentation. This is possible because the type of analysis presented here can serve as an independent source of information for monitoring the quality of programme implementation. In the case of Niger, for example, we observe that there is a clear association between SFP and selected educational outcomes overall, but this association does not hold in some school districts. This information should be of interest to those involved in the implementation of the SFP who, as a first step, could take a closer look into the implementation of the programme in the districts with deviant results. In other words, this use of available data could give rise to a monitoring strategy based, at least in part, on the analysis of deviant results.

Every SFP is different in coverage and in application -- i.e., some cover the entire country and leave little methodological room for comparisons. Also, available educational statistics vary greatly from country to country. This means, of course, that the analysis presented here might not be possible elsewhere. However, a rigorous and creative look into both the SFP and the available statistics in any one country should yield some possibilities for the sort of evaluation/monitoring analyses presented here.

Table 1. NIGER: Comparison of primary schools with SFP (C) and those without (NC) on selected educational indicators by district, 1983/84

District	Number of schools	Number of pupils	% Repeats	% Ex-cluded	% R+E (wast-age)	CFEPD* Success rate for all schools	CFEPD* Success rate "Urban" schools excluded
Ovallam							
C	13	1,554	13.7 (N=214)	9.4 (N=147)	23.1	9.1 (N=296)	-
NC	58	4,337	7.7 (N=334)	8.1 (N=351)	15.8	15.2 (N=705)	13.8 (N=516)
Tillaberi							
C	4	443	10.3 (N=46)	6.1 (N=27)	16.4	45.5 (N=55)	-
NC	81	8,493	11.9 (N=1,014)	8.6 (N=734)	20.5	25.5 (N=1,163)	22.1 (N=982)

*CFEPD = the Certificat de fin d'études du premier degré
the primary school leaving examination

Table 1 (contd...)

District	Number of schools	Number of pupils	% Repeats	% Excluded	% R+E (wastage)	CFEPD Success rate for all schools	CFEPD Success rate "Urban" schools excluded
Filingué							
C	11	1,460	Data as reported do not permit these calculations			31.9 (N=213)	-
NC	60	7,960				21.1 (N=1,199)	20.9 (N=1,065)
Diffa							
C	13	927	17.9 (N=166)	14.0 (N=130)	31.2	24.5 (N=143)	-
NC	18	1,622	17.2 (N=279)	7.2 (N=117)	24.4	46.3 (N=203)	31.5 (N=89)
Tchin Tabaraden							
C	18	2,060	Data as reported do not permit these calculations			31.9 (N=235)	-
NC	2	59				14.3 (N=7)	-

Table 1 (contd...)

District	Number of schools	Number of pupils	% Repeats	% Excluded	% R+E (wastage)	C F E P D Success rate for all schools	Success rate "Urban" schools excluded
N'Guigmi							
C	8	475	35.5 (N=169)	8.0 (N=38)	43.5	20.9 (N=86)	-
NC	7	762	15.2 (N=116)	7.0 (N=54)	22.3	36.8 (N=76)	-
Maine Soroa							
C	19	1,166	Data as reported do not permit these calculations			29.4 (N=180)	-
NC	15	1,313				35.0 (N=163)	37.3 (N=75)

Table 1 (contd...)

District	Number of schools	Number of pupils	% Repeats	% Excluded	% R+E (wastage)	C F E P D Success rate for all schools	C F E P D Success rate "Urban" schools excluded
Agadez							
Rural nomad schools with canteens	23	1,827	19.9 (N=365)	12.6 (N=231)	32.6	33.4 (N=341)	-
Urban sedentary schools without canteens	10	2,734	15.8 (N=433)	8.4 (N=232)	24.2	28.8 (N=468)	-
Arlit							
C	9	514	10.7 (N=55)	7.0 (N=36)	17.7	44.0 (N=75)	
NC	6	2,022	16.0 (N=324)	8.2 (N=167)	....	29.2 (N=322)	27.3 (N=66)

Table 1 (contd...)

District		Number of schools	Number of pupils	% Repeats	% Excluded	% R+E (wastage)	CFEPD Success rate for all schools	CFEPD Success rate "Urban" schools excluded
Gouré								
	C	20	2,022	15.7 (N=318)	9.0 (N=182)	24.7	7.2 (N=375)	-
	NC	19	2,142	18.1 (N=387)	7.0 (N=149)	25.1	31.4 (N=331)	26.4 (N=190)
Magaria								
	C	9	1,111	17.9 (N=199)	10.7 (N=119)	28.6	16.9 (N=195)	-
	NC	102	12,897	18.3 (N=2,366)	9.6 (N=1,232)	27.9	14.5 (N=2,164)	12.5 (N=1,843)
Mirriah								
	C	7	811	13.9 (N=113)	8.8 (N=71)	22.7	21.1 (N=142)	-
	NC	75	8,832	18.7 (N=1,653)	11.1 (N=978)	29.8	11.9 (N=1,717)	11.4 (N=1,599)

Table 1 (contd...)

District	Number of schools	Number of pupils	% Repeats	% Excluded	% R+E (wastage)	CFEPD Success rate for all schools	CFEPD Success rate "Urban" schools excluded
Tanout							
C	12	1,060	Data, as reported, do not permit these calculations			9.1 (N=164)	-
NC	48	4,372				12.6 (N=643)	10.3 (N=523)
Tessaoua							
C	5	496	12.1 (N=60)	6.9 (N=34)	19.0	19.5 (N=82)	-
NC	51	6,368	15.3 (N=974)	10.2 (N=650)	35.5	17.1 (N=1,227)	14.8 (N=999)
Nayahi							
C	7	685	26.1 (N=179)	17.2 (N=118)	43.3	24.4 (N=119)	-
NC	39	4,295	25.3 (N=1,085)	17.5 (N=758)	42.8	31.7 (N=684)	26.0 (N=561)

Table 1 (contd...)

District	Number of schools	Number of pupils	% Repeats	% Excluded	% R+E (wastage)	CFEPD Success rate for all schools	CFEPD Success rate "Urban" schools excluded
Dakoro							
C	9	750	14.3 (N=107)	9.5 (N=71)	23.8	52.5 (N=80)	-
NC	38	3,175	19.9 (N=631)	18.3 (N=581)	38.2	24.7 (N=482)	19.0 (N=390)
Guidam-Roundji (Maradi)							
C	2	291	18.2 (N=53)	6.2 (N=18)	24.4	58.6 (N=29)	-
NC	46	6,342	18.0 (N=1,139)	10.9 (N=691)	28.9	20.6 (N=1,065)	-

Table 1 (contd...)

District	Number of schools	Number of pupils	% Repeats	% Excluded	% R+E (wastage)	CFEPD Success rate for all schools	CFEPD Success rate "Urban" schools excluded
Bilma							
C	4	278	19.4 (N=54)	12.9 (N=36)	32.3	10.8 (N=65)	-
NC	8	677	16.2 (N=110)	13.9 (N=94)		33.1 (N=127)	27.7 (N=83)
Kollo							
C	7	782	23.1 (N=181)	11.8 (N=92)	34.9	9.5 (N=137)	-
NC	136	13,948	16.9 (N=2,362)	9.9 (N=1,382)	26.8	15.2 (N=1,851)	12.4 (N=1,650)

Table 2. Means of educational outcome variables for schools with and without SFP (weighted sample)

Educational outcome	Schools with SFP	Schools without SFP	t value
CFEPD success rate for all schools	0.29	0.19	9.1
CFEPD success rate for rural schools only	0.29	0.18	10.2
Repetition rate	0.18	0.16	2.2
Drop-out rate	0.10	0.10	-1.6

Table 3. Correlations between educational outcome variables and SFP (weighted sample; SFP treated as a dummy variable, 0 or 1)

Educational outcome	S F P
CFEPD success rate for all schools	0.34 ($p < .01$)
CFEPD success rate for rural schools only	0.38 ($p < .01$)
Repetition rate	0.11 ($p < .05$)
Drop-out rate	-0.08 ($-p < .10$)

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(3) Ibid, p. 21.

(4) Levinger, op. cit., pp. 374-375.

(5) For a discussion of this approach see : R. Sack, "Proposal for a study to monitor the impact of school feeding projects on educational outcomes." Unesco: ED/EFD/UNF, February 1985 (draft mimeo).

CONTRIBUTION OF SCHOOL FEEDING PROGRAMMES TO SCIENCE TEACHING

by Sheila A. Turner and Jenny Frost

Ms. Sheila A. Turner and Ms. Jenny Frost, the authors of this article, are both specialists in science education at the Institute of Education of the University of London (U.K.). The article was prepared originally for a Workshop on School Feeding and Education held in the south of India at the end of 1983.

CONTRIBUTION OF SCHOOL FEEDING PROGRAMMES TO SCIENCE TEACHING

by Sheila A. Turner and Jenny Frost

It is generally recognized that education in its broadest sense encompasses not only those activities which take place in the classroom but all activities in which an individual engages. All too frequently school feeding programmes are seen as being isolated from what takes place in the classroom. They could, however, provide a basis not just for sound nutrition and social development but for a variety of learning experiences. One of the areas where feeding programmes could be used to support and develop more effective teaching is science and technology. This paper will look at ways in which this might be achieved; the emphasis will be on work which could be undertaken at primary level although many of the ideas are applicable to secondary science, particularly within integrated science courses.

Being Scientific

It is not our intention to provide a 'contents' list. We believe that scientific ideas will accrue from the exploration of the immediate environment. Children should be encouraged to be curious about their surroundings, to observe, explain, experiment and communicate their ideas and findings. The following extract from 'Science in Primary Schools' by HMI (1) illustrates the point at which a study becomes a 'systematic enquiry' and hence can be labelled scientific.

> 'However, it is very easy for pupils to do a great deal of work on birds with almost nothing that could be called scientific being included. To draw or paint birds, to make collections about them, to assemble

pictures, even to read and write about them may not be at all scientific. A systematic enquiry might involve looking not only at the birds themselves but at their mode of living; investigating their food preferences and the way they are adapted to their habitat; it might include comparison between birds of different types, different habitats and different distributions geographically and numerically. Explanations might be sought for the appearance of certain birds in certain places, and for seasonal variations in the bird populations.'

In this paper we explore the topic of school feeding programmes to make explicit a range of systematic enquiries that could stem from this part of the pupils' environment.

Demands on Teachers

Teachers often do not know the answers to questions children ask them. Finding the answers should ideally become like a voyage of exploration and discovery but it can often pose a threat to teachers. They need to feel confident in their own subject area and too often their own education and pre-service training provides them with little or no satisfactory experience in science -- including nutritional science. Thus there is a need for support and help, particularly if they are to start with children's questions or to encourage children to ask questions.

The job of managing and organizing a class of children engaged in these explorations may involve new skills for some teachers. This extends to the task of keeping records of, and evaluating the children's achievements and learning.

In addition, new teaching resources may be needed but we hope that our account will indicate how only simple, readily available materials which can be easily stored, are necessary.

Finally, even when working in the way we suggest, it is all too easy for a narrow range of topics to be taught to pupils in their primary schools. This is where discussions on 'content' are useful, as they provide

guidelines for areas of study. School feeding programmes provide a rich resource for science and technology teaching over a wide range of 'content'.

Teaching Approaches

In primary schools the greater integration of subject areas permits an approach to teaching which is far broader and more flexible than that of the traditional subject-orientated-secondary school curriculum. Also teachers in primary schools are normally 'generalists' rather than specialists and therefore often find it less difficult to make connections between different subjects. In the discussion which follows we explore the ways in which four topics, namely :

A - School Feeding Programmes

B - Food

C - A Staple Food (for example, rice)

D - Equipment in the School Kitchen

can be used as starting points for systematic work in science in conjunction with other subjects.

A - Using School Feeding Programmes as a Basis for Teaching Science

School feeding programmes in themselves provide a valuable starting point for scientific investigation based on the pupil's own experience. Most pupils at primary and lower secondary level will not be able to appreciate the reasons for feeding programmes, other than perhaps at the level of satisfying hunger or providing meals which their families may be unable to give them. There are, however, many questions which can be asked to which pupils can be encouraged to find the answers. The following five topics could provide the basis for pupil investigation:

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1. *Selection of Food for School Feeding Programmes*

What sort of foods are provided? Why?

This is part of a complex process involving availability and cost, local customs and preferences as well as the children's preferences (children are often very conservative in their food choice and wary of experimenting with unfamiliar foods), the dietary needs of the pupils and ease and time of preparation. Children can find out why certain foods are selected in preference to others; this type of investigation can involve children in buying food in local markets or in growing their own vegetables. Studies of this type would require liaison between teachers and those involved in the feeding programme, for example, cooks.

2. *Organization and Management of School Feeding Programmes*

- How many children have to be fed?
- How much food is needed?
- How much does it cost to provide this food?
- How much money can be spent on food?
- Is the food bought, if so, where? - or is it donated?
- What sort of food is provided?
- Who plans the menu?
- Are some foods only eaten at certain times of the year? Why?
- Who prepares the food?
- How long does the food take to prepare? Is it easy to prepare?
- How many people are employed to cook and serve the food?
- Is more than one meal provided at school; if so are the meals different? Why?
- What time are meals served?

- How are the meals served? Is a cafeteria system where pupils collect their own food better than others?

- Who decides how much food each pupil receives?

- Who clears away after the meal?

- Who organizes the washing up and who does it?

- How is the kitchen arranged? Can pupils suggest improvements?
  (This may involve pupils in drawing plans and in studies of movement around the kitchen.)

These questions are among some of those that can be asked about the organization of feeding programmes within a school; and which could be related to both the selection and preparation of food.

3. Food Preparation

Pupils themselves can on occasion perhaps be involved in the preparation of school meals so that they can experience the problems of catering for large numbers of people, different methods of cooking, the need for hygiene, both personal and in the cleanliness of the food and cooking utensils, as well as of the kitchen. They would then be able to compare this with what happens in their own homes and to work out the reasons for any differences. This type of activity would provide many opportunities for basic and relevant experience in measurement including weighing, capacity and estimation.

Questions to which answers could be sought include:

- What food is used? How is this food prepared?

- Which food needs washing before it is used? Why?

- How much water is used in the preparation of school meals?

- Is local fresh food used or is some of it brought from other places?

- Is tinned or other preserved food used? Is powdered milk used?

- Is all the food cooked? Which food is cooked? Why?

- How is the food cooked? (Is this the same method which is used in their own home?)

- What types of ovens or stoves are used in the school kitchen?

- How do these ovens work?

- What are the alternative methods of cooking that can be used?

- How does cooking change food?

- How much food is wasted? Is this wasted food made up of inedible parts of plants or animals or is it food that is left over?

- Is food not eaten because too much has been prepared or because pupils do not like it? What happens to any food which is not eaten?

- Is the food, or some of it, served hot; if so how is it kept hot until it is served? Does this affect or damage the food in any way? Does it increase the risk of contamination or infection?

4. Food Storage

Catering for large numbers often involves obtaining large quantities of food and storing it until it is needed. Examination of which foods are stored and how this is done can be the beginning of much work on methods of food preservation and the problems connected with food storage, deterioration and wastage, the effect of climate and pests.

5. Transport of Food

Some foods for school feeding programmes may be bought locally, but frequently food has to be carried across considerable distances. Some food may even be imported. Different methods of transport, for example lorries, trains,

ships, air freight, may be involved. Much work can be undertaken not only on which method of transport is used but on how the method chosen depends on factors such as cost and availability of transport, the energy supply for the transport, the type of food - some foods cannot be transported easily - road networks, the terrain and seasons. There is also the question of how food is packaged if it has to travel long distances. Pupils can try devising methods for packaging foods so that eggs, for example, arrive undamaged at their destination.

B - Using the Topic of Food as a Basis for Teaching Science

A possible teaching approach to the subject of food which can be linked to school feeding programmes could be developed taking the following six questions as starting points:

1. Why do we need food?
2. How do we select our food?
3. How do we produce our food?
4. How do we prepare our food?
5. How do we store our food?
6. What effect does our agriculture have on the environment?

A good beginning is for pupils to consider:

- What do they eat?
- Do they eat different food at different times of the year?
- Does everyone in the family eat the same food?
- Why do they eat particular foods and what is good about this?

Thinking about these questions - very much at the level of the children's experience and perceived as relevant to that experience - can then lead to appropriate work on growth and energy and the chemistry of food substances.

These topics, however, involve concepts which are difficult to grasp for young children, but much understanding can be achieved by observation of, for example, growth in animals, including humans and plants; measurement, including weighing, and graphing results can also be undertaken. Observations can be made of what is needed for healthy growth in animals and plants - including water and warmth as well as food substances. Growing their own plants or raising live-stock in the environs of the school can help children in understanding these processes and in appreciating the need they themselves have for certain foods in their diet. At a simple level the way in which we eat and how we digest our food can be studied. An investigation of food habits within the local community will highlight how the selection of food is part of a very complex process which is related, among other things, to social customs and religious beliefs, the structure of the family, the place of the individual in the family and the local community as well as individual requirements and preferences, farming practice and land use within the community, economic constraints, the availability of food and water, climate and the type of environment, whether rural or urban.

The production of food is something which should be familiar to children living in rural areas but to children living in cities it is not necessarily so - rice may be a food which only arrives in packets, and the connection with the plant remains a mystery! Children need to have experience of growing plants and raising and looking after livestock. The function of the school garden will vary depending on the location of the school and the needs of the pupils. For some children this may be their only experience of observing living things, learning about life cycles and discovering how the food they eat is produced, which plants are edible and which parts of the plant are eaten. For others it may be an opportunity to learn more about selective breeding or experimenting with plants which could be grown as alternatives to those customarily planted in the area. Such gardens can be used to supply food for school meals and to give children an opportunity to market their produce and learn about the constraints of 'supply and demand' (do the things they have grown sell well because of their size, quality or because they are in short supply?).

A study of food production can lead to a range of activities related to plants and animals. Some of these have already been mentioned. Others can include the examination of seeds, for example, cutting them open to look at the structure within any outer protective layer. Where feasible, commonly eaten fruits could be used and the seeds germinated. The conditions needed for germination could be studied, for example, is water essential? What is the effect of temperature? Is light, or the absence of light, important? This leads readily into work on the growth of young plants and how plants make food:

- What nutrients do plants need?
- Why do so many plants have green leaves?
- What happens if plants are kept in the dark
  - or if they are shaded on one side?
  - or grown in the shade?
- What happens if plants are not watered?
  - Can they be given too much water?

Work involving the measurement of growth rates has already been discussed, additional work might include pupils examining different plants - do all plants grow at the same rate? Do plants produce flowers at particular times of the year? How are seeds distributed? This may be important in the context of school gardens where unwanted seeds germinate to produce 'weeds'. Why are weeds important? Do weeds grow faster than plants grown for food? Which plants produce most seeds? This can introduce the idea of competition and also of colonization and succession on soil which is left bare.

The selection of plants grown for food depends on a number of factors such as their yield - including yield relative to the bulk of the plant and area of land, resistance to disease, climate and soil, their ability to produce sufficient yield to provide a year's supply of food (ability to store the crop satisfactorily is important) or to provide two crops annually, local farming practice, external economic pressures, for example for cash rather than food crops.

Many of these ideas can be understood by older primary school pupils as can their possible impact on school feeding programmes.

A study of food production is a study of a technology. It shows how people have solved problems such as:

- How can I use the power in the wind to grind my grain?
- How can I store grain so that it does not rot?
- How can I plough my land more rapidly?
- Is it possible to make a better fire for cooking?
- What can be used to cook food in?
- How can land be irrigated or drained?

The solutions to such problems are often ingenious but they may not be the only solutions. The artefacts we have: windmills; racks and drying sheds; ox-drawn and tractor-drawn ploughs; closed fires with adequate chimneys - or gas or electric ovens; pans made of metal; pumps, reservoirs, wells, irrigation and drainage channels, etc., are solutions chosen in a particular place at a particular time. These tools and machinery involve different materials joined together, strong structures made from flimsy material, gears, pulleys, levers, wheels, axles, lubricants, ropes, cutting tools, and so on.

If children have the experience of making simple gadgets, of solving simple technological problems within their capabilities, then they will begin to ask: 'I wonder why it was made like that? Could we improve the design?' Their ability to observe and understand the artefacts in their environment will increase. In a later section we outline how artefacts concerned with food could be valuable starting points for systematic investigations.

The choice of suitable crops is not merely dependent therefore on the physical environment or nutritional values but on external constraints such as economic marketing factors - something which can also affect foods used in school feeding programmes. These factors also apply in

animal husbandry. Schools may be able to provide the facilities for pupils to learn something of this from first hand experience, possibly through keeping goats for milk or hens to provide eggs. Much work can be done on life cycles, reproduction, growth and parental care, feeding of animals -- how does their diet differ from that of humans? How much food do animals of different types and sizes consume? How do they eat their food and how do they use this food? If the animals are used as meat, is this more nutritious for people than it is for them to eat the same plants as the animals? What diseases do animals suffer from and can these be transmitted to humans? (examples could be given: tuberculosis, brucellosis, tapeworm infections). Studies could also be made of animals which are used for food in different parts of the world for example, termites, grasshoppers, fish, birds.

The preparation and storage of food has been discussed in the section on work which can be developed from school feeding programmes. Some useful practical work can be developed through investigating how foods can be preserved by, for example, drying, salting, pickling, tinning, bottling, freezing or smoking. Other areas which could be developed further are the effects of climate - humidity, temperature - on food spoilage and the protection of food from animals such as rodents, birds and insects.

The final question - what effect does agriculture have on the land - can lead to work at a very simple level involving pupils observing the effects of animals grazing, or local land clearance and farming practice, for example field irrigation. It also encompasses work on ecology, for example, the effects of agriculture on natural communities of plants and animals; the effects of fertilizers and ploughing on the physical and chemical structure of the soil as well as on the microfauna and flora.

C - Using a Staple Food (for example Rice) as a Starting Point for Teaching

The topics already outlined are broad and can be adapted to suit the needs of pupils of different ages. However, for practising teachers with little time to reflect, it

is often more helpful to start with easily obtained material which can be taken into the classroom and which children might be taken to see growing in the neighbourhood. A study of a staple food, for example rice, cassava, yams, could form part of an integrated programme of work which would include aspects of science and make links with school feeding programmes.

A study of rice could start with the examination of a single grain of rice: the observation of its size, shape and colour encourages questions such as:

- How big is the grain?
- Are all grains the same size?
- Is it possible to measure one single grain?
- How heavy is one grain?
- If the scales are not accurate, is it better to weigh 100 grains to find the average weight of one grain?

Work in science and mathematics can be extended by germinating rice grains (can you germinate a rice grain? What proportion of seeds germinate?) and measuring the growth of seedlings. The fact that not all seedlings either germinate or grow at the same rate illustrates the need to measure more than one plant and to decide how many seedlings need to be measured to provide a valid result. Conditions required for germination can be studied by providing, for example, grains with different amounts of water. Studies of full grown plants can include investigation of how many grains are produced on each plant? Do all plants produce the same number of grains? How many plants are grown per square metre? Investigations of the life cycle of the plant including pollination and development of the rice grain (what part of the plant is the rice grain?) can be undertaken by observation of local paddy fields or by growing plants in school. Plants can be treated in different ways, for example, grown in the dark or in the shade, in different types of soil, to determine what conditions are needed for growth. Holding a white cloth below a mature rice plant and shaking it gently may reveal large numbers of small invertebrates which also use the

rice plant as a source of food. Thus, the process of planting, growing and harvesting rice involves an understanding of biology, climate and technology.

Links to school feeding would include a study of different varieties of rice and how they are used and cooked. This can lead to thinking on how much is eaten by an individual, a family, a school, in a day, a month, a year - something which necessitates measurement and estimation. Work on the nutritional value of rice, the effect of cooking and different methods of cooking as well as the use of whole grain or 'polished' rice could also be undertaken.

The starting point for the study of rice need not necessarily be a scientific or mathematical one. Other areas of the curriculum where work on this topic could be developed are:

Geography:
- Where is rice produced and why is it produced in these areas?
- Where is rice used for food?
- How is rice transported?

History:
- What impact has rice (as food) had on man's history?
- What are the earliest records of its use?

Folklore:
- This may relate to familiar sayings about rice as well as music.

Myths and Legends
- A study of stories and poetry will answer the question: 'How and why is rice written about?' as well as providing opportunities for children's own creative writing and drama work.

Art:
- The plant may be represented in paintings and drawings - perhaps those found in books.
- Rice plants could be used in art, for example, in producing collages or in fabric printing.

Other activities could include games with a competitive element, for example estimating the number of rice grains in a jar - and seeing who can make the best estimate. Cartoon characters and puppets could also be used.

Suggestions for starting points such as those listed above are shown in Figure 1, which also indicates how links between subjects could be made. Subjects not classified as science, for example history, often include methods of thinking and inquiry-based work such as those described in this paper with reference to science. The 'methods' of science are not exclusive to science: logical thought is as important in history and geography as it is in applied chemistry.

D - Starting with Kitchen Equipment

In many schools, especially in developed countries, children do not see their food being prepared at school, nor do they have any idea of the scale of the enterprise. A visit to the school kitchens would reveal not only how the food is prepared but also what equipment is used. Questions relating to the organization and management of school meals, the preparation and storage of the food, have already been mentioned. The type of questions which might now be asked would include:

- What time are the ovens switched on (or the fires lit)?
- How long does it take for the ovens to get hot enough?
- What fuel is used? How much fuel is used? Who pays for it?
- How are the ovens kept at the right temperature?
- Do the kitchens get impossibly hot?
- How do people pick up heavy hot saucepans?
- How many different types of saucepans and pots are used?

- What implements are used? Are any unusual?
- What materials are the implements made of? Why?
- Where is food stored? How much is stored?
- How is food measured?

After visiting the kitchen the teacher may well want the children to make a record in drawings and writing, but he or she must also look for questions that will lead to simple systematic enquiry by the pupils if such activities are to count as science.

Can a small source of heat be used to boil water? (children can safely use candles or a small oil lamp). They will find that they can only boil small quantities; larger quantities, even when heated all day, will not boil. This may start them wondering whether heat and temperature are the same thing. Can they boil larger quantities by putting a lid on the container, or perhaps by shielding the candle? They could design shields themselves. It is possible that some pupils will design such a good shield that no air reaches the fuel - and so discover that fuels need air. Other activities could include burning substances under a jar or investigating whether a wire heated from a battery needs air. Can the sun be used as a source of heat for cooking?

The children may find the kitchen very hot and this may lead to a comparison with temperatures in other rooms. If the school does not have a thermometer, the children can time how long it takes for a piece of metal or glass that has been dipped in water to dry completely. This can initiate discussion on the design of the experiment and whether the experiment was 'fair' as well as the effect of draughts and humidity. How can the children account for variation in temperatures in different parts of the building?

Looking at pans used for cooking may provoke questions about what makes a good saucepan. If the kitchen has very large pans the teacher may be able to find a series of small ones to be tested: do they all boil water at the same rate? are they easy to pick up? are they safe to use? what materials are they made of? why do some have lids?

Other simple classroom activities could include:

1. Investigation of cooking times for large and small lumps of food.

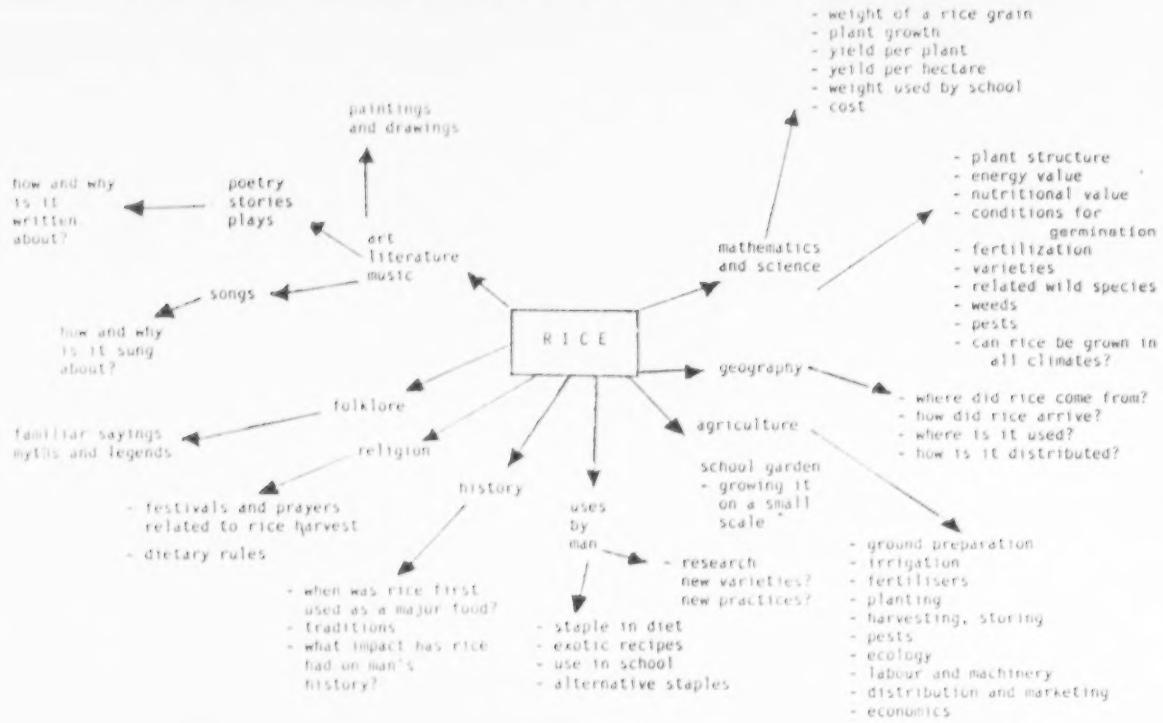
2. The effect of surface area, temperature, ventilation and humidity on drying and storing; this could be related to local drying techniques.

3. Testing different substances, for example salt, flour, to see what happens when they are mixed with water or oil.

Resources for Teaching Science - with Respect to School Feeding Programmes

Very little specialized or expensive equipment is needed; the suggestions we have made here require items that can be acquired locally in almost any part of the world. In addition teachers may need a place to store equipment where it can be maintained in good condition and is readily accessible. The most valuable resource in the teaching of science is undoubtedly the teacher, especially one who is willing to exploit the environment for educational purposes. It is appreciated that success in the type of work suggested in this paper requires time, thought and energy on the part of the teacher and also support and encouragement from heads of schools, in-service trainers, and inspectors.

Fig. 1. Diagram to illustrate how work on rice could be developed in different subjects areas.



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ANNEX

STATEMENT OF MR. JAMES INGRAM
EXECUTIVE DIRECTOR, WORLD FOOD PROGRAMME
TO A MEETING OF THE WORLD FOOD COUNCIL
ROME, 18 JUNE 1986

This statement by the Executive Director of WFP gives information on the work of the World Food Programme.

Mr. Chairman,

I am pleased and honoured to have the opportunity to address this World Food Council meeting under your distinguished leadership.

There is necessarily a close relationship between the work of WFP and the deliberations of this Council. While the two organizations have always had a close and productive relationship, which I am sure will flourish as much under Mr. Trant as it has with Mr. Williams, I believe that the recent change of format in your proceedings can only promote understanding. Thus, WFP welcomes discussions of food aid issues and suggestions from this Council and we would like to see stronger links between you and our own governing body, the Committee on Food Aid Policies and Programmes.

The Goals of the World Food Programme

I would now ask you to bear with me while I explain a little bit about the World Food Programme. The Programme was formed in 1963 to use food aid to combat hunger and promote economic growth in the developing world. Initially an experimental 3-year effort, WFP was soon made the permanent food aid arm of the United Nations system.

There is a common misconception that WFP is a "relief" agency, providing food in times of drought or for other natural disasters. Such emergency operations are a vital part of what we do. Indeed, emergencies like the food crisis in Sub-Saharan Africa and increasingly serious refugee situations in Africa, in Asia, and elsewhere have severely tested our managerial and logistical abilities. Nevertheless, emergency operations still generally constitute only about a third of our total expenditures.

We are instead mainly a development agency -- in fact the largest United Nations development agency. Thus, to date the Programme has invested more than $9 billion in nearly 2500 projects throughout the world. This has been made possible by progressively greater support from donors over the years. In fact, I think it is fair to say that WFP is the one major United Nations agency which has shown

a consistent pattern of growth. In most of our development projects poor people receive food as whole or part payment for their efforts to overcome the causes of their poverty -- that is, "food for roads", "food for land development", "food for afforestation", "food for clean water" and so on.

The Programme is constantly seeking to use food aid in innovative ways to promote food production. Thus, we have designed development projects that support institutions in developing countries that are engaged in applied research, extension and the supply of agricultural inputs and credit to farmers. We are also helping the governments of developing countries formulate national policies on the use of food aid, particularly within the context of structural adjustment and public policy measures for stimulating food production. In these endeavours we are working closely with institutions like CGIAR,* the World Bank and IFAD.** WFP's record shows that our commitment to better co-ordination within the UN system is not a matter of mere words.

Africa -- A Continuing Crisis

Nowhere is the need for effective food aid more pressing than in Sub-Saharan Africa. As it stands today, Africa is a continent that cannot feed itself. Cereal imports -- commercial and food aid -- are at levels 5 times higher than 15 years ago. Last year alone, donors sent more than 6 million tons of food aid to lessen the devastation of widespread famine.

Prolonged food shortages have taken their toll on the families of the Sahel -- up to 30 per cent of preschool children are severely malnourished and 40 per cent suffer from anaemia. The crisis continues for the people of Africa even as the attention of the media of the developed world now begins to fade.

We must accept the fact that for the foreseeable future Africa will depend heavily on food aid -- even in years of relatively abundant harvests. There are those who believe that by accepting this we are somehow "institutionalizing" food aid, unwittingly creating an international welfare scheme.

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* Consultative Group on International Agricultural Research (FAO/UNDP/World Bank)

**International Fund for Agricultural Development

But the alternative is to stand by and watch as millions suffer from hunger and malnutrition. I know of no one who would choose that alternative. The question then becomes not "whether" to provide food aid but how to make the food aid we do provide a positive force in economic development.

With the proper types of development assistance, Africa undoubtedly has the capacity to feed itself. We are not dealing with a hopeless cause by any means, as indeed was revealed in such an interesting way yesterday evening by Dr. Swaminathan in his lecture. Even modest improvements in farming methods and inputs would enable African farmers to feed the population the continent is expected to have in the year 2000.

The Role of Food Aid in Development Assistance

I am proud to say that WFP has played a pivotal role in the short-term emergency efforts in Africa. The Programme delivered, on its own behalf and on behalf of bilateral donors, about a quarter of all the food aid provided to drought-affected African nations in 1984-85. But just as importantly, we provided a logistical capability that enabled donors and the affected countries to ensure that food reached the needy in time.

Now that the worst of the crisis is passing, the critical question for Africans is what role can food aid play in helping them achieve greater economic self-reliance, especially in agriculture.

Food aid is, in fact, a very considerable portion of official development assistance. Worldwide it constitutes a tenth of all aid to developing countries: in Africa that figure rises to one-fifth. The fact that food aid constitutes a very high percentage of economic assistance for some of the poorest African countries makes it doubly important that it be used effectively.

Reaching African Development Objectives

The appropriate measures needed to foster economic recovery in Africa have been the subject of considerable discussion and debate in the international community.

The action plan adopted at the United Nations General Assembly's Special Session on the Economic Situation in Africa calls for an additional $128 billion in assistance for African economic development over the next 5 years. The African nations themselves have said they will provide $82 billion from their own resources and are looking to donors for new pledges of assistance to obtain the remaining $46 billion.

Among the major goals outlined in Africa's Priority Plan for Economic Recovery are increased food production; intensified efforts to combat drought and desertification; development of improved transportation networks; and agricultural pricing policies that encourage farming. A recurring theme at the Special Session was the call for "Food-centered" development.

"Food-centered" development is in fact what WFP is providing, not only in Africa but worldwide. WFP projects promoting agriculture and rural development last year amounted to 78 per cent of our expenditures for development. In 1984-85 the Programme committed resources worth over $1 billion to this sector out of a total investment of $1.5 billion in development projects.

WFP spent, in fact, $517 million on African development projects in 1984-85 -- roughly a third of our total expenditures for development. The food-for-work projects we are sponsoring in Africa coincide with the goals African governments have now set for themselves. They promote irrigation, curb the loss of forests, conserve the soil, build rural roads and achieve other goals important to farmers. Other WFP projects seek to enhance the continent's human resources through support for health and education.

In a particularly ambitious project, WFP is promoting soil conservation in Ethiopia to counter erosion and land degradation. To foster critical economic policy reforms, WFP is sponsoring two price stabilization programmes in Mali and Mauritania. Funded at $15 million, they are the Programme's first use of food aid to support agricultural price reforms that will give African farmers greater incentives to produce.

Criticisms of Food Aid

Food aid is helping to achieve important development goals in Africa and other developing regions, but it has also been subject to considerable criticism. There are those who seriously question its value -- in the governments of developed countries, in academia, and sometimes in the nations receiving assistance themselves.

Some see food aid as undercutting local farmers in developing countries, others see it as hurting commercial sales by farmers in developed countries who rely heavily on sales overseas for income. The media often give extensive coverage to isolated instances of misappropriation, food spoilage and fraud, far greater attention than they give to successful development or emergency operations. Nearly everyone finds fault with the amount of food aid given, for some it is always too much, for others never enough.

Much, if not most, of the criticism of food aid is well intentioned. There is, however, an emotional connotation to criticisms of food aid that is missing in discussions of other forms of assistance. This, I believe, gets in the way of examining food aid's actual impact and the creative ways it can be put to use.

We have to remember that many criticisms of food aid apply equally to all types of assistance. The main difference is that food aid is more visible. For example, technical advisers who are unsuitable and must be repatriated or scholarships for students who never return to their countries are two examples of wasted development money. But these failures are not so easily seen.

We believe that much criticism of multilateral food aid can be answered by a careful examination of the statistics about WFP's operations. In fact, very little food is lost or misused and we have managed to deliver food with relative economy, often under difficult circumstances. In 1985 food losses and unauthorized distributions combined amounted to only 0.69 per cent. We have consistently held overhead costs to between 3 and 5 per cent and kept two-thirds of our staff in the field working on the monitoring of projects and the logistics of food delivery.

As to the question of food aid's impact on the agricultural trade of developed countries, I think it is fair to say that it is minimal, especially in Africa. Eighty-five per cent of the food for WFP development projects is used in the world's poorest countries, nations with per capita GNP in 1983 of less than $790. These nations have limited import capacity. One could also note that food aid itself produces sales for the farmers of exporting nations - sales that might not otherwise take place at all.

The heavy debt load and recent high interest rates are largely to blame for slower commercial food sales by developed countries, not food aid. In fact, to the extent that food aid projects can be made to contribute to economic growth in developing countries they support long-term market development for the major food exporting nations. It is only through sustained economic growth that developing nations can earn the foreign exchange to pay for any significant increase in food imports. Agricultural policy makers in the exporting countries -- if not the general public -- also know that the developing world now holds the most promising agricultural markets for the years ahead.

The negative impact that food aid can have on local production is a much more valid issue and one that requires constant attention and adjustment. WFP's own evaluations have shown it is essential to design our activities very carefully to avoid undermining farmers in developing countries. This applies not only to food-for-work and other development projects but also, and I would stress this, to the way we tailor deliveries of food aid for emergencies. We believe that WFP has been uniquely successful in avoiding disruptive impacts on farmers and that this is an important reason for the growing support we get from both developed and developing countries.

One extremely valuable aspect of the public awareness and debate over food aid is that it leads us in WFP to re-examine constantly and critically what we actually do. Among international agencies WFP is held in high regard for the comprehensive and forthright evaluations which it makes of its own work, the full results of which are communicated to national governments. We believe that

food aid is a difficult resource to use well and we are totally committed to learning from past experience and applying those lessons to our project design and management and to our response to emergency situations.

As you know, our governing body, the Committee on Food Aid Policies and Programmes, has been given responsibility, among other things, for formulating proposals for effective co-ordination of all food aid -- multilateral, bilateral and emergency. I have recently submitted to them a comprehensive evaluation of the international response to the African famine. This evaluation draws far-reaching conclusions which are the subject of continuing consideration by the CFA. However, one change which is urgently needed is to make the so-called International Emergency Food Reserve more of a true reserve and more genuinely multilateral. The CFA has endorsed my recommendation that comprehensive proposals be developed for consideration.

Conclusion

In sum, managing food aid today is a tremendous challenge. It calls both for strong management and a sound conceptual approach that supports rather than undermines development.

I do not believe that more food aid for its own sake is what we need. Instead, we must have food aid that complements financial and technical assistance and fits into a feasible development framework for each country receiving it.

Whether it is used in development projects or in emergencies, food aid must be used to combat the underlying causes of hunger and poverty. Because, ultimately, we will not measure the success or failure of food aid in the number of people fed, but in the number of people who feed themselves.

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* *Exists in French*
** *Exists in French and Spanish*

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